

August 2009

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digit

YOUR TECHNOLOGY NAVIGATOR

First Look
Intel's
Core™

Exclusive

The XBOX 360 Revealed!

- Bazaar's Back! Product Reviews Galore!
- The Best Internal And External Hard Drives
- Take Your PC Into The 64-Bit Era
- DDR2 And The Future Of DDR
- Half-Life 2: Episode One Reviewed!



Jasubhai

Editorial

Shut Up!

THAT'S WHAT THE Government said last month to the Indian blogging community. In a knee-jerk reaction to the Mumbai blasts, the Computer Emergency Response Team of India (CERT-IN) instructed all Internet Service Providers to ban a select 17 sites that might (as per the Government's belief) help terrorists communicate with each other. Unfortunately for the blogging community, some of these were on free blog hosting providers – TypePad and Blogspot – while some were on Geocities, a free service. As a result of the gag order, the ISPs banned the two blog domains as well as Geocities in their entirety!

Did they do this because they didn't know how to block specific sites? If that's the case then this move surely reflects the lack of understanding about IT amongst both ISPs and the Government. It also smacks of covert attempts at Internet censorship—because all this happened discreetly, without any prior notice or a public announcement.

Indian bloggers gradually discovered, to their dismay (after having exchanged notes—on the phone for a change), that access to their blogs had been blocked. Worse still, the director of CERT feigned cluelessness when asked about the drastic move. His initial response when asked about the ban: “Somebody must have blocked some sites. What is your problem?”

Knives were out immediately, and bloggers around the world united to start a site where censorship on the Net was discussed threadbare, and where details on how to circumvent the ban were given out. A majority of Indian dailies reported the incident and printed the entire list of the 17 banned sites. As a result, these very sites, which were possibly nondescript till now had been made famous thanks to the ban, and their traffic shot up. “It thrills me to death that my little online journal has been noticed by the wonderfully tolerant Government of India,” said one blog carrying political propaganda.

What also happened as a result of this ban is that genuine and resourceful blogs such as mumbai-help.blogspot.com set up to disseminate vital information during emergencies in Mumbai—such as the recent blasts—were shut down. It is these blogs that come to the rescue if and when cell phone networks jam—this added to the bloggers' outrage.



Deepak Ajwani Executive Editor

“Internet might not remain the ultimate enabler of democracy”

One blogger pointedly asked, “Will the Indian Government turn off the water supply to the nation if they discover terrorists use water to live?”

This act of censorship is as futile as it is self-defeating. But it also ends up setting a dangerous precedent that any speech, online or otherwise, can be stifled if found anti-governmental.

The Government had earlier announced its intention to introduce a Broadcast Bill to muzzle the television media – apparently an attempt to arrest the series of sting operations on politicians. Then they made an amendment to the Right to Information Act that excluded, from public purview, bureaucrats' file notings. And now this Web site ban.

It suddenly seems that the Internet might not remain the ultimate enabler of democracy.

I'm appalled. These are precedents, and a possible sign of more smothering censorship to come.

editor@thinkdigit.com

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COVER
 Photograph **Jiten Gandhi**



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



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Want your product reviewed by *Digit*?
 Contact our Test Centre at testcentre@jasubhai.com



Software On DVD/CD

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Advertisers' Index

Client	Page
Adata	53
Busy	109
Canon	43
Compuage	140
Cricket today	107
Dell	14,15
Deutsche Bank. Inside back cover	
ECS	45
Emerson	27
Enjay	73
Epson	13
Freescall	39
I2IT	21
Kunhar	49
LG	2, 3, 4
Mediatech	83
MSI	25
NDTV	95
Nikon	7
Rediff	18, 19
Ricoh	55
Royal Challenge	Back cover
Sony	77
The Week	85
Tirupati	47
Viewsonic	35

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

Products Reviewed This Month

HARDWARE	Western Digital WD1600JS	Seagate Pushbutton Backup 160 GB
Internal Hard Drive	Western Digital WD2500JS	Seagate Pushbutton Backup 400 GB
HitachiDeskstar HDS725050KLA360	Western Digital WD2500KS	Transcend Storejet 40 GB
HitachiDeskstar HDS725050KLAT80	Western Digital WD4000KS	Transcend Storejet 2.5 80 GB
HitachiDeskstar HDS728080PLAT20	Western Digital WD5000KS	Western Digital Passport 120 GB
HitachiDeskstar HDT722516DLA380	Western Digital WD8000BB	
HitachiDeskstar HDT722525DLA380		Bazaar
HitachiDeskstar HDT722525DLAT80	External Hard Drives	80
Samsung HD 120UJ	Freecom FHD-XS	Forsa 7600GS
Samsung HD040GJ	Freecom FHD-2 PRO	Gigabyte GV-NX76G256D-RH
Samsung HD080HJ	Freecom FHD-3	XFX GeForce 7600GS 256MB DDR2
Samsung HD160JJ	lomega Portable Hard Drive 80 GB	DUAL DVI TV Xtreme Edition
Samsung SP0411N	Lacie Carte Orange	AM2 5000+
Samsung SP2504C	Lacie Design by F.A. Porsche 40 GB	Victorinox Swiss Pen Drive 128 MB
Seagate ST3250824AS	Lacie Design by F.A. Porsche 250 GB	Everglide Titan
Seagate ST3400832AS	Lacie Rugged RUG U2	DSkeeper 10 Professional
Seagate ST3500641AS	Lacie Skwarim 30 GB	JBL ON TIME
Seagate ST3750840AS	Qrisma1" Portable Micro drive	Logitech Quickcam Image
Western Digital WD1200BB	Seagate 5.0 GB Pocket Hard Drive	MSI K9N SLI Platinum
Western Digital WD1200JS	Seagate 40 GB Portable Hard Drive	
Western Digital WD1600BB	Seagate Pushbutton Backup 200 GB	Intel Core 2 Duo
		78

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Enter



16 Director Sudhir Mishra would like to use technology to put actors and singers out of business

16 Search is always a hot topic, and social search is getting hotter

28 Everyone's waiting for Office 2007! Why the "X" in Office 2K7 file extensions?

Digital Passion

29 Studio 64

64-bit computing—what is it, anyway? What is it good for? What software is available for your 64-bit rig right now? Should you make the switch? (You will, eventually, of course.)

32 All-Round Joy

A *Digit* exclusive, and our cover story. We took a good, hard look at the Xbox 360. Our verdict? Turn to the page!



36 Memoirs of Memory

All you wanted to know about DDR, DDR2, DDR vs. DDR2, and were not afraid to ask; here's the dope if you asked and didn't get the answers



41 Antelligence!

Researchers are figuring out how to use large numbers of little robots to do stuff not possible with monolithic structures. We report from the intersection of the robotics and nanotech worlds

Contents Magazine

Digital Tools

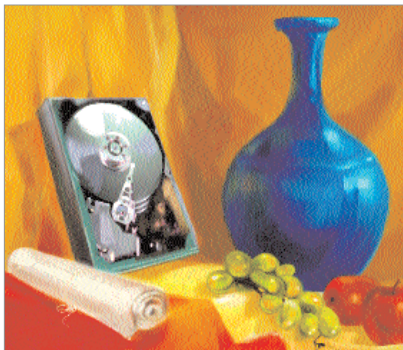
51 One For The Road

Reviewed: lots of neat little apps for popular Mobile platforms. Pack some extra power into your phone—smart or otherwise!



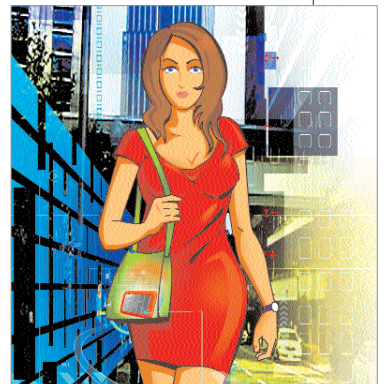
57 Fatter Platters

In the market for a new internal hard drive? Going around asking friends and even enemies about what to buy? Find your answer here, then max out your credit card! (No, we also reviewed smaller disks.)



66 Boxes For Your Bytes

External hard drives are a luxury for some and a necessity for others. If you want or need one respectively, here are the results of our tests



78 Here Comes AMD's Nemesis!

Heard about Conroe, Intel's latest processor? If you haven't, here's your best intro. And even if you have, here's all the straight dope

80 Bazaar

The Bazaar section is back by popular demand. An assortment of new products tested: from a classy Swiss Army knife that incorporates a USB stick to the latest in the world of hardcore hardware

Digital Business

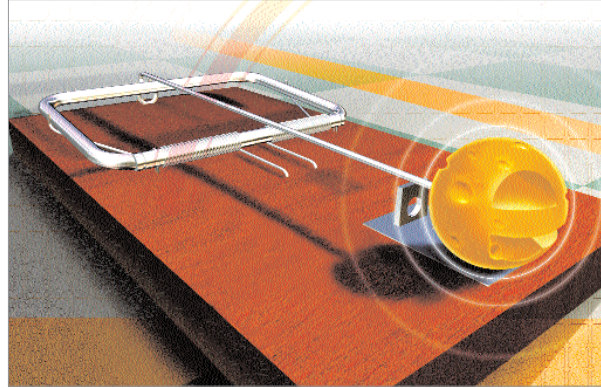
105 Upwardly Mobile

The demand for coders for mobile apps can only increase—the field is literally growing by the month, if not by the day. Is this a career option for you?



108 The Net Threat

As a businessperson, you absolutely need to be aware of the dangers that Internet connectivity poses these days. Mentioned here are the most conspicuous, and what you should be doing about the problem



112 Face Off

Some computer dealers have a Web site. Some don't, and won't. Why? Does an Internet presence actually make a difference? Two conflicting views

August 2006

Digital Leisure



117 Timepass Tips

If you didn't already know, find out what kinds of inane stuff people do with their broadband connections. Sorry dial-uppers!

140 Tabloid Tech

Women in IT bring out a calendar in an attempt to change the perception of the field. But why the bikinis?



120 Game On

"The best-looking Racer on any platform. Ever." Don't you feel like flipping through the pages already?

Escape



127
David Huffman, our informal Man of the Month, invented something we're dependant on—every single day

127
Some gamers are so hooked they need detox. They now have a home away from den

REGULARS

Three Incredibly Useful Sites20
The Digital World20
Beat That22
Gender Benders26
Buzzword Of The Month26

Take A Crack48
Geek Dreams50
Tips & Tricks87
Q&A96
Agent 001100

Tech Quiz125
Bluff Your Way Through128
Digit Diary129
Blogwatch129
Inbox138



DIGITAL PASSION

GAME
FIFA Manager 06

FIFA Manager 06 is the only management simulation to boast fully-licensed teams and players from every major league around the world



Penumbra



Penumbra is a horror adventure game featuring state of the art graphics and makes heavy use of physics

Prey



Prey is serious, dark story, based on authentic Cherokee mythology. Themes of sacrifice, love and responsibility are explored and the story dives into emotional territory

Gentoo i686 Live Install CD



Extreme configurability, performance and a top-notch user and developer community are all hallmarks of the Gentoo

LINUX

- AllTray 0.69
- aria2 0.6.0+1
- Ekiga
- Firestorm 0.5.5
- Ri-li 1.0.2
- Room Juice 0.3
- Smart Publisher 1.0.1
- PDFReactor 1.1.936

DEV TOOLS



PostgreSQL 8.1.4

PostgreSQL is a powerful, open source relational database system

- #develop
- EmEditor Free 6
- IAB Studio Enterprise RIA Server 5
- Speech SDK 5.1

DIGITAL TOOLS

CINEMA 4D R9.6

CINEMA 4D offers you more possibilities than ever before, whether for film, television, advertising, scientific simulations, architecture, product design or any other field that demands professional results



Jahshaka

Edit with flexibility and speed, create effects in real time, animate with unlimited features, paint and design on moving video, create music with all the tools the pros use, work in any format at any resolution



WinDVD Platinum 7 Release 8

Whether it's a Hollywood movie, art movie, or a home video clip, WinDVD 7 gives you the full power over the viewing and listening experience



MULTIMEDIA

- FilmShrink
- MediaCoder 0.5.0 pre-release



- QuickTime Alternative v1.71 beta 2
- MySlideShow Gold
- VCD Cutter 4.03



- Audiotools v5.42

INTERNET

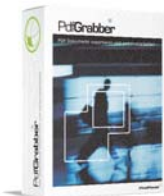
- IncrediMail Build 2421
- Internet Explorer 7 beta 3 (SP2)
- Mobility Email 1.5.0.4
- Safety.Net 3.61
- SpamAssassin for Win32 3.1.1.0
- SPAMfighter Standard 4.5.7
- TerraIM 1.2
- Windows Live Messenger
- MessageLock for Outlook 2003 1.30
- The Bat! Professional 3.80.06

SYSTEM

- A Note
- AMD CPU Information Display Utility
- Autopatcher
- Desktop Sidebar 1.05 Build 115 Beta
- PDFCreator 0.9.2
- RyanVM's Windows XP Post-SP2 Update Pack 2.0.7a
- NextSTART 4.0
- PerfectDisk 7
- SiSoftware Sandra Lite 2007.6.10.98
- WinBackup 2.0 Standard Trial 2.1.2

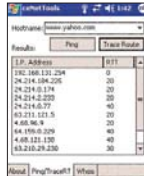
DIGITAL BUSINESS

PdfGrabber 3.0.0.13



The PdfGrabber enables the export of contents from pdf documents into different formats, i.e. Pdf to Excel, Pdf to RTF or Pdf to Word

CeNet Tools



It is a PocketPC based network utility which supports ping, traceroute, and Whois

TCPMP



This program handles all sorts of video and music files; supported codecs: MPEG, Divx, Xvid, H.264, MP3 and OGG video and audio formats. Goes great with PocketDivXEncoder

PRODUCTIVITY TOOLS
CABARet Stage 2.0



- QPS Classic Updater 3.5.2
- Web Response Grabber GM SQL 3.5.1
- Mail Master 1.0
- Nesox Email Marketer 1.40
- PdfGrabber 3.0.0.13
- ShareContacts 2.32.0152
- Sirana SpamCenter 2.0

MOBILE APPS

- AutoLock for S60 3rd Edition 1.0
- JUMLIX Standard Edition 1.0.1
- Phone Profiles
- PocketGBA
- Redial
- zSIRC



DIGITAL LEISURE

SMALL GAMES
Wildlands Free Full Game v9.5.1.16



- Tremulous
- Bricks of Atlantis
- Granny in Paradise
- Theseus: Return of the Hero

MOVIES



MOVIE of the MONTH

Things To Come

Things to Come opens with a near-future forecast of Christmas 1940 in the metropolis of Everytown, a city threatened by world war

- Millon Dollar Weekend

VIDEOS

- Numa Numa Dance
- The Scene, Episodes I and II

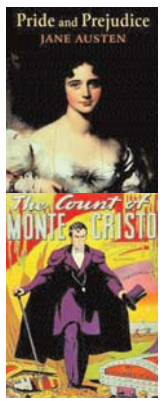
E-BOOKS

- Alice's Adventures in Wonderland



- Java-A beginner's Approach

- Pride and Prejudice



- The Count of Monte Cristo

DIGIT DVD EXCLUSIVE: MS Office 2007 Beta 2

NOTE: To get your Activation Key for Microsoft 2007 Beta 2 visit www.microsoft.com/india/office

DIGITAL PASSION

Oracle Data Miner



Oracle Data Miner is a graphical user interface for Oracle Data Mining that helps data analysts mine their Oracle data to find valuable hidden information, patterns, and new insights

DBDesigner 4



DBDesigner 4 is a visual database design system that integrates database design, modeling, creation and maintenance into a single, seamless environment

Yahoo! Messenger Plug-in SDK



The Messenger Plug-in SDK is a JavaScript and C++ API that you use to create add-ons with collaborative features that can run inside Yahoo! Messenger

DEVELOPER TOOLS

- .NET FormatDesigner
- AccDBMan - MS Access Database Manager 2.12
- DFM2HTML 1.4
- G-Mapper 1.3x Plus
- ASP.NET Maker 2.1.1
- Resource Database Editor 2.0

LINUX



Quake III SDK 201

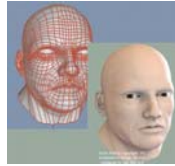
Linux SDK offers Linux users a toolchain to create maps and game code modifications for Quake III

- digikam
- ALSA driver 1.0.12rc1
- Beagle
- DataparkSearch 4.38
- digikam
- F-Spot
- Htnews 0.70
- Samba 3.0.23rc3
- Skencil 0.6.17
- Xen
- Opera



DIGITAL TOOLS

Wings 3D



Wings 3D is best suited for modeling and texturing low-polygon meshes, towards which its interface is geared

Windows Media Player 11



This new player allows you to customize the look of Windows Media Player to match your mood, extend your music experience

MULTIMEDIA

- ANVSOFTE Flash Slide Show Maker
- iMeXoR - Video Image Extractor 2.0
- POV-Ray 3.6
- Alive Text to Speech version : 5.2.1.0
- A-one Video Joiner 3.21
- Photo2DVD Studio
- RM to MP3 Converter

INTERNET

- Ayttn
- Bon Echo Alpha 2 Milestone
- Exodus 0.9.1.0
- Gaim 1.5.0
- Mozilla Thunderbird 1.5.0.4
- SXBandMaster
- Symantec Internet Threat Meter
- Yahoo! Messenger with Voice Beta (V8)
- Advanced Email Monitoring
- iOpus File and Website Downloader

SYSTEM

- Avast antivirus update
- KlipStack - Clipboard Manager
- My Data 1.0
- Norton AntiVirus Update for Windows
- PDFCreator 0.9.2
- RootKit Hook Analyzer
- RootkitRevealer
- File Recover 6.0
- F-Secure BlackLight Beta
- Registry Mechanic 5.2
- Spyware Doctor 3.8

ESSENTIALS

- .NET Framework 1.1
- Avast Home Edition 4.7
- Digit Software Archive 2006 Beta
- Foxit PDF Reader 1.3 build 0104
- Irfan View 3.98
- K-Lite Mega Codec Pack 1.53
- VLC Media Player 0.8.5
- Spybot Search and Destroy 1.4



DIGITAL BUSINESS

Sunbird 0.3 alpha2



The Sunbird Project is a cross platform standalone calendar application based on Mozilla's XUL user interface language

AvantGo



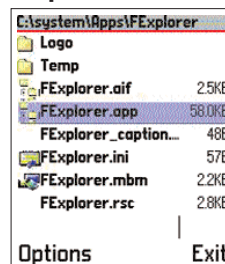
It is a well known off-line browser that allows you to view specially made version of websites called channels, offline

Mobilpocket Reader 5.2



It is an eBook Reader, which also allows you to read news and RSS feeds. News can be read offline when you sync your phone with your desktop PC

FExplorer



It is a file manager which allows you to browse your phone's internal memory, its ROM, and your memory card

PRODUCTIVITY TOOLS

- Adventnet ManageEngine ServiceDesk Plus 5.0
- bcTester Barcode Reading and Testing 4.1.0.1
- Cars 1.5
- eZ publish
- Time Travel 1.2
- XL Report Builder 2.1.1
- pdf-Office 4.0

MOBILE APPS

- Bemused
- Converter 2.2
- Diddlebug
- LED Off
- PuTTY
- SharkMSG

DIGITAL LEISURE

SMALL GAMES

Final Fantasy VII: The Dark Cloud



Street Bike Fury



In Street Bike Fury you will be challenged by 14 waves of enemies coming at you on your bike while you are constantly doing flips and other stunts to regain health

Stunt Playground



The game features extremely realistic physics that are fully integrated into both the driving, and the editor as well. This means you can arrange the various props and jumps in any way imaginable

- Cube 2
- Spy

VIDEOS

- Fearless
- Lady in the Water
- Miami Vice
- Scoop



Online



By Demand

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

Office 2007 Beta

Size: 440 MB

Eclipse SDK 3.2

Size: 120 MB



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Question poll:
How much of a gamer are you?
 I complete games
 I game 1 - 10 hours a week
 More like 10 - 20 hours a week
 More than 20 hours a week
 Hey, I don't count!
 I'm gaming all the time!

Digit Patrons

It really does pay to be loyal! Find out more on www.thinkdigit.com

Digit Reader Poll

This Month's Question

As regards blogs, I...

- Have a regularly-updated blog
 Have a blog, but am too lazy to post entries often
 Just read blogs
 Don't have one, don't care

To vote Log on to www.thinkdigit.com



taste technology at www.thinkdigit.com

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

Every month, we will feature a member tutorial from the forum here.

[Click here to go back to](#)

thinkdigit.com

Make DVD iso from CD isos of Fedora Core 5

21-07-2006,
04:11 PM

Ok here are the steps.

[Rollercoaster](#)
In The Zone



Join Date:
Mar 2005
Location:
Dehradun
(U.A.)
Posts: 291

What u need:

1. The CD isos of Fedora core 5 ofcourse(the 1st five only, as sixth is rescue)
2. Magic ISO to edit images. or any other free alternative
3. An editor.
4. A Dvd Burner.
5. Daemon tools(makes life easier and lessens the free space req.)
6. 4 Gb free HDD space(+ the space the CD isos are taking up)

ok here is the HowTo:

1. Copy the CD1 to a temp folder.(there should be 4 GB space on this drive)
2. Open Magic ISO and browse for the file.
3. From the root of the image see for a file nemed ".diskinfo"
4. Right click and extract on desktop.
5. Now open a command promp and type "edit"(notepad doest work with this nicely, u can use textpad too)

6. Browse to the ".diskinfo" file. it will look like this:

Code:

```
1142397842.393345
Fedora Core
x86_64
1
Fedora/base
Fedora/RPMS
Fedora/pixmap
```

7. Edit the file to look like this, basically append ",2,3,4,5" after "1" in line 3.

Code:

```
1142397842.393345
Fedora Core
x86_64
1,2,3,4,5
Fedora/base
Fedora/RPMS
Fedora/pixmap
```

8. Save the file.

For the full tutorial (and many more) visit:
<http://www.thinkdigit.com/forum/showthread.php?t=32416>

AMD Buys ATI

The processor giant and the graphics goliath confirmed increasingly heating rumours on July 24, announcing their plans to join forces following a \$5.4 billion deal. Prepare yourself, world, for some incredible products in the future!



Rumour: Intel To Add 3G To Next-Gen Centrino

The next generation of Intel's Centrino platform, code-named "Santa Rosa," may well include 3G mobile phone network connectivity as well as the standard Wi-Fi, if allegedly leaked company roadmaps are to be believed



Enter

Sudhir Mishra

Director

Sudhir Mishra is a director, of *Chameli* and *Calcutta Mail* fame. He has been a producer, story writer, dialogue writer, and also a screenplay writer.

Technology to you is...

... a means by which you can express your thoughts and put your ideas across.

What gadgets do you use?

I have a computer at home, a laptop, a mobile, an iPod, and a DV camcorder.

What would be your dream gadget, and why?

A gadget by which you could do away with actors, singers and all... It ideally would be a combination of hardware and software, where I can pick a face and voice and then write the screenplay, select the scene, and do the whole movie sitting at home! Something like in an animation...

What do you do online?

I search for information. Yesterday, I happened to have been searching for a speech by William Faulkner—a literature Nobel Laureate. The Internet is a vast storehouse of information and you tend to waste time if you don't know where to search for what you want. I also check my mails regularly.

Any instance where technology has really helped you?

In 1998, when my wife was on a visit to Rishikesh, there was a landslide... If not for the mobile, it wouldn't have been easy to find out what was going on there.

BEYOND ALGORITHMS

Search Vistas

Search need not mean just Google or Yahoo! or MSN or any of the biggies. There exists no ideal search engine. For finding a quote by Winston Churchill, you're best off using something like Google. But for finding "deep" information on a subject like Bach's music, you might or might not be.

Consider a search site called PreFound.com, which explains the following about itself. We quote it because it is representative of "social" search in general:

"PreFound.com allows users to see what others have gathered by hand from the Web. Knowledgeable, interested people can identify relevant sites with greater accuracy than a search engine. You can leverage the work already done by others and build on that base. So search what has already been found on the Web! PreFound.com can cut through the clutter a typical Google search might return by adding the human element." Essentially, after you've found a bunch of useful links on a topic, you share that with the community.

One can't yet say how far such search will catch on, but the traditional-search companies—including Google and

Yahoo!—are listening, and with attention.

Del.icio.us is a site where you share bookmarks and thus discover new sites. Flickr is a photo-sharing site where you tag your pictures and contribute to the pool of photos people worldwide can search for and discover. And Yahoo! bought both

methodology. At Eurekster, results are weighted based on how many users click to a given site.

Then there's StumbleUpon, where one types in any topic of interest and clicks to find a random page of interest. Digg.com and Netscape.com invite visitors to recommend and vote on which items get to the top of the search list.

Where search involves finding answers to specific questions, we have Yahoo! Answers, and the paid-for Google Answers. Microsoft is working on something similar.

Chris Sherman, executive editor of Search Engine Watch, has said there's room for lots of players in the search race: "We've got the major players out there, but as people get better at learning how to navigate the Internet, they're not going to necessarily be looking for an answer from the titans anymore. They're going to be looking for more specialised or personalised information." But Shashi Seth, product manager for Google Co-op, has said specialisation will never take away much business from the major companies.

"They're all very niche players in the area of search," Seth said. "We still believe people will find core search fulfilling the bulk of their needs."

The "problem" is that so much of the information



these start-ups—which says something about the gaining importance of social search. Part of Google's foray into social-search territory has been its launch of Google Co-op, an information-sharing feature.

According to reports in the media, Steven Marder, co-founder of Eurekster Inc, said Yahoo!'s and Google's entry into social search validated their (Eurekster's) philosophy and





Security Watch

Microsoft Office Vulnerabilities Again

A vulnerability has been uncovered in several versions of Windows including XP Home and Professional. It can be exploited to compromise a system, allowing execution of arbitrary code—meaning an attacker can take over your computer.

The vulnerability is related to the handling of hyperlinks in Office documents, such as Excel spreadsheets. It can be exploited to cause a “stack-based buffer overflow,” by tricking a user into clicking a specially-crafted hyperlink in a malicious Excel document.

This vulnerability has been confirmed even on a fully-patched XP SP2 system running Excel 2003 SP2. Other versions may also be affected.

The solution to this as of now is only to not open untrusted Office documents, and not to follow hyperlinks in any Office document.

Security experts say they’ve spotted a flaw in PowerPoint being exploited “in the wild.” July 17, Microsoft issued an advisory on the vulnerability, which it said affects PowerPoint 2000, 2002, and 2003, and that it hoped to have a patch released for it by August 8 or sooner. So there’s no solution as of now—except to be extremely careful about what e-mail attachments you download and open.

Microsoft says the flaw is not present in its free PowerPoint Viewer 2003 application. However, some people believe that last statement cannot be entirely trusted, and that the PowerPoint Viewer might, too, be vulnerable.

out there is unstructured, untagged, unclassified. Different approaches are needed to allow users to access precisely the information they want. In fact, sites such as StumbleUpon show that “discovery” can be considered an offshoot of search, where people just have an interest and are not searching for anything in particular. Sites such as digg.com demonstrate the concept of democracy in search. And so on.

Search is continually evolving. As this evolution happens, and as people—both users and entrepreneurs—discover new needs and possibilities, the methodologies themselves diversify.

Social search is now just beginning to take off. And it’s not competing with any sophisticated algorithms: it just serves a specific function.

MORE DIFFICULT TO HANDLE

New Arenas For Spam

According to a study by e-mail services company MessageLabs, spammers are increasingly exploring the areas of mobile text messaging, Web-based instant messaging, blogs, and social-networking communities. Bayesian and other improved e-mail spam-filtering techniques have indeed done a good job, but this, in conjunction with the

lack of such filters for the newer communication technologies, means that spammers would naturally turn to these new channels.

“New communication channels are largely unprotected and offer rich pickings for spammers wanting to make sure their messages get through,” said Paul Stamp, a Forrester analyst.

MessageLabs has said in its latest monthly malware report that spammers were “more effectively targeting recipients based on age, location and other characteristics.” Social networking sites offer spammers a “new level of convergence and capability to profile people,” said Mark Sunner, CTO of MessageLabs. Spammers are focusing on such sites, creating phony and convincing profiles, which contain links to “automated instant messaging chat-bot sirens” that entice unwary Netizens to “lucrative Webcam sites,” and then either advertise the usual Viagra or implants—or attempt to put spyware on their computers. The MessageLabs report said, in addition, that spammers are using bait in the form of “friend requests,” generated by bots to target online profiles in large numbers. Blogs, too, already have too many spam comments that contain links to “disposable spam domains,” MessageLabs found.

Link spam, too, is on the rise on both IMs and on the Web—Sunner told

HOT Episodic Game Releases



A money-spinning idea for game developers (lowered costs and more sales thanks to repeat business) and one that gives gamers their fix more often—the episodic game has arrived!

They're too short!

Sure, you get your fix every six or seven months, but ask yourself: “Would I spend Rs 1000 every six months for a six-hour game, or upto Rs 2500 after four years, for a gloriously long, elaborate 20-hour game?”



ZDNet UK, “Spammers send just a hyperlink, which can lead to a malicious site, or a phishing site. We expect more cross-fertilisation of malware as Yahoo!, MSN, and Google become one big blob.”

As people communicate more—and in more ways—it’s only to be expected that where people congregate, the spammers will arrive. Only an increase in the newer types of spam can be expected. Analysts, however, say there is no cause for undue concern—the anti-spammers, who have thus far concentrated on Web and e-mail security, are also starting to look at the new channels and how to effectively protect the public. Which means the tide is rising, but it will fall in due course of time to acceptable levels.



One Silly Question

“You’re playing an FPS. Whom would you shoot?”



“Whoever made the game!”
Amarjeet Singh Arora



“My brother...”
Amruta Dhanawade



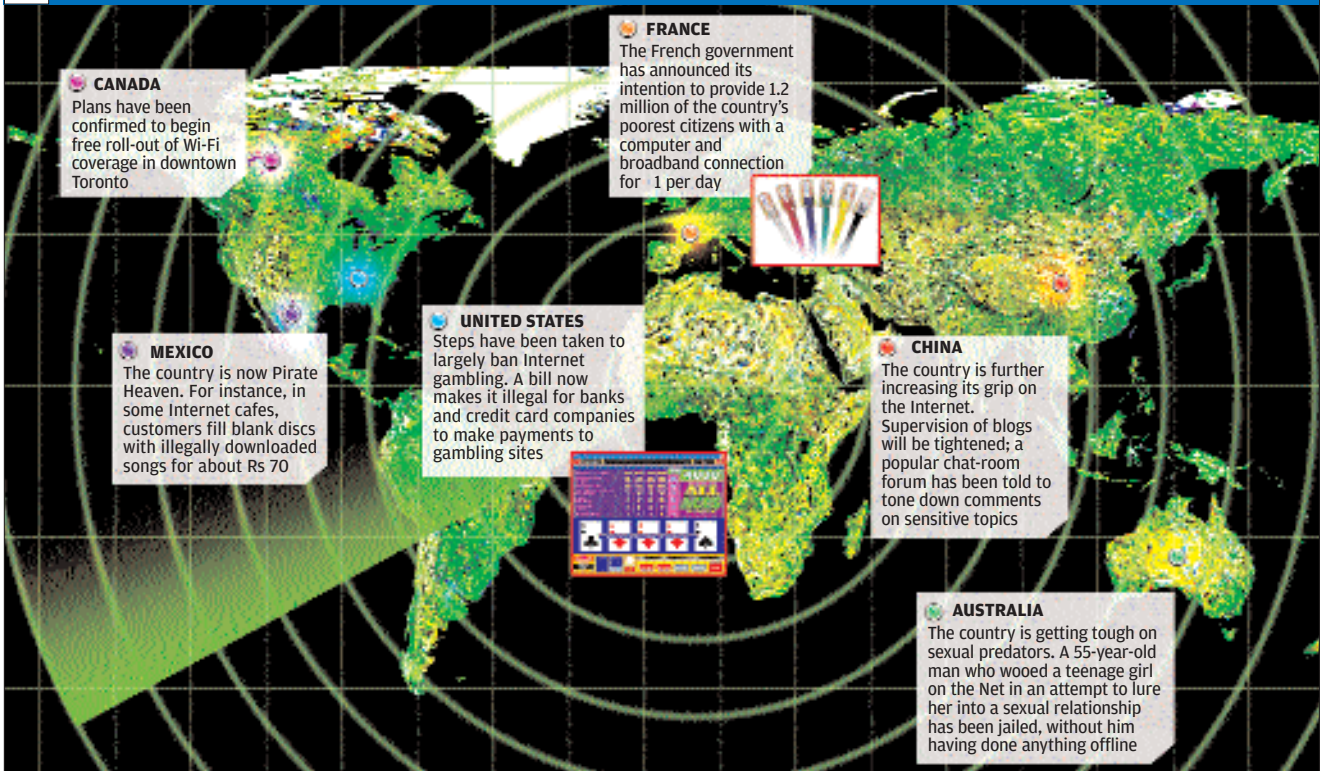
“My tuition class lecturer!”
Rohit Patil



“My boyfriend!”
Vrushali Pawar



“Bosco, my neighbour’s dog!!!”
Tanul Khedkar



CANADA
Plans have been confirmed to begin free roll-out of Wi-Fi coverage in downtown Toronto

FRANCE
The French government has announced its intention to provide 1.2 million of the country's poorest citizens with a computer and broadband connection for 1 per day

MEXICO
The country is now Pirate Heaven. For instance, in some Internet cafes, customers fill blank discs with illegally downloaded songs for about Rs 70

UNITED STATES
Steps have been taken to largely ban Internet gambling. A bill now makes it illegal for banks and credit card companies to make payments to gambling sites

CHINA
The country is further increasing its grip on the Internet. Supervision of blogs will be tightened; a popular chat-room forum has been told to tone down comments on sensitive topics

AUSTRALIA
The country is getting tough on sexual predators. A 55-year-old man who wooed a teenage girl on the Net in an attempt to lure her into a sexual relationship has been jailed, without him having done anything offline

WHO'S TO BLAME?

It's Getting Tougher On The Kids

Last month's cover story **L**was about what kids are exposed to in the adult world online. But when talking of children and the Internet, one also needs to consider what they are exposing online—on social networking sites, for example, or video-sharing sites.

Statistics are available for some countries, which could be representative of the situation in others. In Britain, an alarming 61 per cent of children aged 13 to 17 have a personal profile on some social networking site. Alarming because some of them are giving out personal details. Some are showing off intimate photographs of themselves as part of their profile. Many are going on to physically meet people they've encountered online. Now consider that in

conjunction with the fact that more than 50,000 sexual predators are estimated to be online at any given time.

Teachers and parents alike are now alarmed at how children are using the sites, including Bebo, Facebook, Friendster, and MySpace.

In Australia, a study has found that 40 per cent of teens "would" physically meet someone they'd met online, and that only 12 per cent would ask their parents permission to do so.

Bebo organises networks around schools, so predators have all they need—the schools' addresses along with the names, pictures, and ages of the kids on the site. And the kids are to blame, too, if kids can indeed be blamed: girls as young as 13 show pictures of themselves in sexual poses—semi-nude or in lingerie.

The phenomenon has not gone unnoticed: the sites are coming under scrutiny. A certain head teacher of a school in England actually called in police after she found that

Three Incredibly Useful Sites

Do you wanna find newspapers or be tickled?

www.soyouwan.com



SOYOUWANNA.COM

So you wanna... buy an apartment? Mix a few drinks? Save some money? Be a model? Learn to play mah-jongg (which we've given out on our CD/DVD)? Flatten your abs? Buy a laptop? Face an interview? Or at least have a sex change, for God's sake? This site where you should be heading. The site teaches you about how to do anything and everything that you didn't learn in school.

www.web.tickle.com



Tickle Tests

Has a lot of tests that provide psychological insights based on actual clinical cases. The tests allow you to uncover the stuff deep inside you, including any skeletons in the closet. They are based on broad categories such as entertainment, style and beauty, careers, relationship, mind and body, teens, lifestyle, family, and partners.

www.findnewspapers.com



FINDNEWSPAPERS.COM

Stop your endless search for relevant news, and take a look at newspapers around the world! Just click on a country name, look at a list of online newspapers from that country, and select a paper. This is a links site that opens up a world of information. The site covers daily newspapers, newspaper archives, articles, and news-magazines.



Photograph Purnendu Mukherjee

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

Beat That!

Digit Caption
"Tech Bed"

Last Month's Winner!

Rohan Kumar
3/61, New Area, Gandhi Nagar,
Jharkhand
"Windows XP 'BABY' Edition"



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

Web Development with Microsoft Visual Studio 2005

by John Paul Mueller
Published by

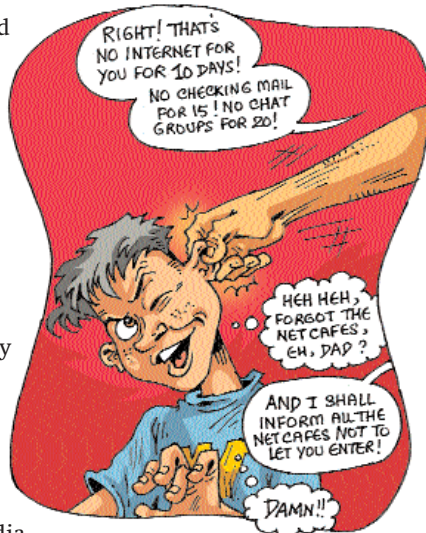


700 of her students had signed up with Bebo, and that some were displaying indecent images. She wrote to parents about her concerns: "Most girls who have registered have included a potentially dangerous amount of personal detail. Some girls' photographs could only be described as soft pornography."

In Australia, the New South Wales Police are said to be keeping an eye on the sites. According to media reports, the Internet unit is dealing with more and more reports from parents worried that their children had been approached online.

"You can't tell kids not to go online. It's part of their lives now," Sergeant Richard Long said. "But they need to be aware that... people can look in and see exactly what they're doing."

It's tough on the kids of this, the Internet generation. Technology is enabling them to do things earlier



generations couldn't, and it does look like at least some of them aren't aware of the dangers. Naturally, education and open discussion are the answers, but there's a growing disconnect between old-school parents and tech-savvy kids. Protecting children from pornography is one thing, but what is to be done when the kids actually want to be perceived as sexy?

There's not really much cause for concern in India: a 15-year-old girl here is

rather unlikely to show off semi-nude pictures of herself online. But that's as of now. Who is to say what it will be like in urban India five years from now?

This issue, like many others, highlights the fact that there's more than just a generation gap between parents and today's children. This is a transitional time—between the offline and the connected worlds. We can only suppose that things will iron themselves out as and when the transition is complete.

BETTER THAN FLASH

MRAM Finally Out

MRAM has been in the news off and on in the past couple of years, with several chipmakers pursuing the technology—including IBM. Now Freescale Semiconductor has announced the commercial availability of an MRAM chip—getting to the finish line first, as it were.

What is special about MRAM, or Magnetoresistive RAM, is that it's a sort of cross between a hard disk and Flash; it's fast, like other magnetic storage, and is non-volatile, like Flash. It's better than Flash because it's faster and doesn't degrade over time. MRAM uses magnetic materials combined with conventional silicon circuitry. In fact, it is referred to as "universal memory," and could potentially take over the role of chips found in nearly every electronic device from PCs to cell phones.

"The older memory technologies are awkward to work with in a mobile computing environment," said Bob Merritt, an analyst with Semico Research. "This is a significant step forward and absolutely critical for moving into the smaller forms that consumers and industry want."

In fact, Will Strauss, an analyst with research firm Forward Concepts, said this was the "most significant memory introduction in this decade." He added, "MRAM, in theory, is the holy grail of memory."

GENDER

Swaradhyee vs. Mohnish



BENDERS

Design A Blog Using WordPress

00:10:57:32



Struggling to find the button that unlocks the theme options, Swaradhyee clicked all the buttons in order. This took some time, but with her fool-proof way of doing things, she eventually found the button. The selection of a suitable theme got her thinking a little too much, we feel. (Go on, girl—just choose one!) At the end, a combination of green and yellow it was. (Flowers and leaves?) Probably because she'd already spent so much time, a harried Swaradhyee skipped the colour and Widget selection entirely. Then she fumbled a couple of times with other sections (*Manage, Blogroll, and Options*). No widgets and not much customisation, and to top it off, she couldn't figure how to view the blog she'd made!



Mohnish oozed confidence and zest when we told him how simple—and fun—our set task was. He was soon looking at how to choose a theme, but missed the button. He then navigated to a section called *Manage*, but didn't find the theme layout option there either. And then it happened: his cursor jumped to *Presentation*, where all the layout options are. Whew! Zooming through the themes, he selected a distinctive black. Selecting the Widgets was just a matter of some juggling. Content with his efforts, Mohnish selected *View Site*, and sat up grinning at the monitor. OK, it needn't have taken as long as it did, but the layout is a little confusing!

MRAM will likely be used in embedded devices, says Saied Tehrani, Freescale director of MRAM and smartmos technology. The first markets for MRAM are likely to be in settings where durability is critical, such as in automotive and industrial settings.

But then there's the issue of price: a 4-Mbit chip costs \$25, which translates

to \$50 (Rs 2,200) per megabyte! Clearly, it isn't going to replace Flash—or hard disks—in commercial devices anytime soon. Freescale selling MRAM right now is more about potential than profit. The fact is, like we hinted at, that it's been difficult to bring to market. Freescale thinks being the first to sell MRAM will give it an

advantage over rivals such as IBM. "By being first, we know how to leverage the technology, how to advance it into other product portfolios," Tehrani said.

350 MILLION USERS

The IM Wall Has Fallen

IM interoperability is quite the buzzword right now, but the idea is not new: interoperability between IM services has consistently topped users' wish lists. In October 2005, Microsoft and Yahoo! had announced that with the release of the next versions of their IM products, their users would be able to talk to each other. That announcement, tellingly, followed Google's launch of Google Talk. And now, the walls have been torn down: the latest versions of MSN Messenger (called Windows Live Messenger) and Yahoo! Messenger with Voice can communicate with each other.

There exist third-party software such as Gaim and Trillian, which allow one to connect to more than one IM service at the same time, but the problem is that the IM services don't support such clients—meaning users could experience difficulties when the IM services tweak certain features. In addition, they don't support audio or video chats, which the new Microsoft/Yahoo! network might.

This is a partnered public beta testing of interoperability between the two IM services—meaning the test is to ensure that the

networks can handle the combined 350 million user base, the world's largest. The test service is available in 19 countries, including India. The trial version of the new, interconnected client was out July 13, with the final release expected by the end of this year.

Users will be able to sign up from the services' home pages: messenger.yahoo.com and ideas.live.com. After the testing period, all users across both networks will be able to cross-IM. Voice chat is, however, not on the list of features for the beta.

Delivering a larger, combined user base, says Laura Martin, an analyst at Soleil-Fulcrum Research, should give Yahoo! and Microsoft "more clout in attracting online advertising dollars." She went on to add, "Combining users creates loyalty. Strategically, it becomes best to partner with a competitor," Martin said.

It looks like partnerships and joint ventures are being increasingly resorted to by Internet tech companies: "The enemy of my enemy is now my friend," said Michael Gartenberg, vice president and research director at Jupiter Research (www.jupiterresearch.com). "With new services coming to market, such as Skype and Google Talk, the ability to maintain interoperability is another reason to remain open and form these types of partnerships."

Joe Wilcox, senior analyst at Jupiter Research, said the new relationship would open the door for cross-advertising. And, "If they're thinking about their future, the integration is just the first step to other things."

Reverse Hyper Threading...

...is what people are saying AMD is into right now. The company is reportedly working—or has already worked—on a new hardware threading implementation, the so-called Reverse HT. This is AMD's reply to Intel's Conroe desktop processor. Reverse HyperThreading, or Anti-HT technology is, reportedly, a function that would allow multiple CPU cores appear to the OS as a single logical processor.

It is said to boost the performance of single-threaded applications on multi-core processors.

Ever since Intel declared the Conroe, the Internet has been full of speculation about how it will stack up, since AMD's AM2 chips "already have Reverse HT," and "just require" a BIOS update and a new CPU driver. Tech forums on the Net are busy dissecting the issue, though AMD has not made any official comments.

Buzzword
of the MONTH



The "X" In Office 2007 What's with the "x"?

The file formats for Office 2007 will use XML and ZIP. The Office 2007 suite files will have default file extensions with "x" after their "old" file extensions—so, for example, .doc and .xls become .docx and .xlsx.

Why is XML used in Office?

Using XML, documents consisting of structured information as content will have some indication of what role that content will perform. XML-based file formats will aid in smooth data interoperability, data management and security, recovery of data, and, of course, reduced file sizes.

How are these different?

Office XML documents will be backwards-compatible with previous versions of the suite. Office XML file formats are ZIP-compressed as a ZIP container, which results in reduced file sizes and improved data recovery with corrupted files. Since the Office XML file formats are platform-independent, any non-Microsoft application such as XML-Broker can be used to process them.

Where does "m" fit into this?

Office 2007 documents saved in Office XML format will not contain any type of code or automation files, which can therefore never be unexpectedly executed. Documents containing VBA Projects, embedded OLE objects, and other binary files can be saved as macro-enabled files, as in .docm and .xlsm. The container package can be inspected for malicious code without even running an Office application.

Who will benefit?

Users, developers, IT professionals and organizations. The openness of Office XML formats aids in third-party application development, and in the creation of task-oriented documents—like reports, spreadsheets or forms with specifications, instructions, procedures or style guides.

When will we see Office 2007?

The last we heard, Microsoft planned a January 2007 release. You can try the Beta 2 from this month's *Digit* DVD.

Smaller players obviously stand to lose: "By combining MSN and Yahoo! contacts, it will be much more convenient to talk with friends on those networks, rather than on AIM or Google Talk," avers Teney Takahashi, senior market analyst at the Radicati Group. "We expect this will drive customers away from more isolated IM services."

ADOBE FLEXES MUSCLES

Flex 2 Launched

Adobe has launched the next version of Flex, which gives Flash developers a platform to develop more complex applications—enterprise-level, even—with much greater ease than before.

Dave Gruber, Product Marketing Manager for Adobe Systems, was in India in mid-July to promote the launch, stating that India was a key market for Flex, thanks to its large population of Java developers. Flex gives Java developers the ability to build Flash-based front-ends for their existing (and upcoming) Java applications.

Since taking over Macromedia, Adobe has rebuilt the Flash Player almost from scratch, adding a Just-In-Time compiler that will run SWF files faster and more efficiently than before. It will also support data streams that will come from Flex applications, and yet have a smaller memory footprint than previous versions of Flash Player.

We're immensely glad that something worthwhile is being done with Flash for a change—this much-abused technology is finally being revamped to do more useful things than annoy the hell out of Internet visitors. One of the demo programs we saw was a full-fledged e-mail client, and the possibilities seem quite promising. Unfortunately, the idiots who build 3 MB Flash

presentations and call their Web sites will probably never learn, but with Flex, the file will only be 2 MB.

In other news, Gruber also confirmed what we were long expecting anyway—the slow fading away of the Macromedia brand. Every new version of Macromedia software will now carry the Adobe tag.

REVOLUTIONARY

Linking The Physical And Digital Worlds

"Invent", goes HP's tagline, or tag-word. But HP is, as we know, not very well known for its inventions... however, here's something that could justify the tagline: researchers at HP recently created an extremely small wireless microchip, called the Memory Spot, which can be used to *affix digital content to physical objects*. This is revolutionary, if not in concept, at least in the way it can be implemented. For example, the chip could be pinned to a photo print, and provide access to the original digital photo!

The Memory Spot measures just 2 mm by 4 mm, is based on CMOS technology, and has a processor, memory, and an antenna.

The chip is self-contained: it is powered by the devices that read and write the data from and to it. These read/write devices power up the chip as they pass over it: the concept here is "inductive coupling," which transfers energy from one circuit to another by means of a shared electromagnetic field.

The readers could be incorporated into cell phones, PDAs, cameras, printers, etc. They could transfer the data on the Memory Spot to a display screen or elsewhere.

Current, working prototypes of the Memory Spot can hold from 32 to 500 KB. The data transfer rate is 10 Mbps—about 10 times faster than Bluetooth. The device operates at 2.45 GHz.

Howard Taub, VP and associate director of Hewlett-Packard Laboratories, said HP's aim was to make potential partners aware of the technology, so they can discuss how it might be further developed and deployed. He said software development kits (SDKs) for developing Memory Spot-related applications will be made available to partners.

"We can put (the chip) literally anywhere," Taub said in a demonstration in San Francisco. "I can embed it on a piece of paper and it will be unobtrusive." Taub showed how the chip could be used to attach an audio file of a physician reading a prescription to a pill bottle.

Taub has called the chip "RFID on steroids." The Memory Spot is indeed something like RFID, but there are several differences—including size, range, data transfer speed, security, and so on.

Potential applications include storing medical records on a patient's wristband; providing audio-visual supplements to postcards and photos; adding security to identity cards and passports; and tagging information to printed documents. One could think of more uses, of course.

The invention heralds a new era in the bridging of the physical and digital worlds: "The Memory Spot chip frees digital content from the electronic world of the PC and the Internet and arranges it all around us in our physical world," said Ed McDonnell, Memory Spot project manager, HP Labs.

An endnote: amidst the furore over the Bush administration's efforts to gain more access to personal information—part of its campaign against terrorism—there are worries about the US government abusing the technology. ■



32 Xbox 360



36 Memoirs of Memory



41 Antelligence!

Digital Passion

Fuelling the pursuit of technology knowledge

Lead Feature

Studio 64

Enter the
psychedelic
world of the
all-64-bit PC

Nimish Chandiramani

You probably felt special when you bought that new AMD64. Thirty-two extra bits to play with! The sun shone brighter, the sky cleared up, and the heavens smiled upon you as you transcended the dregs of the 32-bit x86 world to new heights of über-geekdom. Your 64-bit desktop would be the Ferrari to your neighbour's bullock cart.

Or would it?

For all the hype that surrounded the launch in 2003 of affordable 64-bit processors for the desktop, all it turned out to be was little more than a big tease. Developments in software have notoriously lagged behind those in hardware, so while we rubbed our hands in glee at the spanking-new hardware platform, we were still using 32-bit software that hasn't been designed to take advantage of 64-bit computing—and we still are.

What's The Bit Idea?

If you've been scratching your head all this while with all this bit-talk, cease worrying immediately. The 32-bit and

64-bit in processor-talk signify the number of bits that the processor uses when it talks to the system memory. Each byte in memory has a unique *address*, denoted by a number that is 32 bits long for a 32-bit processor, and 64 bits long for a 64-bit processor. With two possibilities for each of the 32 bits (0 or 1), 32-bit processors have the ability to access 2^{32} memory locations, each a byte in size—totalling up to just 4 GB of memory. This means it can load 4 GB of code and/or data into your system's RAM (assuming you have that much) and take advantage of the much higher speeds that it offers when compared to hard disks. Now before you say "But 4 GB ought to be enough for anyone!", take a

Illustration Chaitanya Surpur



Illustration Pravin Warhokar

moment to reflect on a certain bespectacled billionaire who is made fun of for a similar statement made more than twenty years ago.

With 64-bit addresses, processors can address 2^{64} memory locations, or 16 *exabytes* of memory. That's 16 billion gigabytes. To put things in a little perspective, a study by the University of Berkeley in 2003 estimated the size of the Internet at 500 million gigabytes. Even if that number has doubled by today, a 64-bit processor could theoretically load *all the Internet* into memory sixteen times over!—assuming, of course, that it has that much memory available to it. On a smaller scale, imagine being able to load a DVD movie into memory—you'd never have to deal with a skipped frame ever again! Or a time when *Half-Life 2*'s annoying "Loading" message is completely non-existent.

What Is It Good For?

Applications that benefit the most from the move to 64-bit computing are those that involve huge amounts of data and/or calculations. The capability to address embarrassingly large amounts of memory isn't the only advantage that a 64-bit processor has—it also has 64-bit registers (which are used as short-term storage, even before the processor's cache memory). These registers are usually used to store numbers that the processor will use in calculations. Doubling the bits in a number results in the ability to represent it with more precision—for example, pi can be represented correctly to

Applications that benefit the most from the move to 64-bit computing are those that involve huge amounts of data and/or calculations

more decimal places using 64 bits. While it is possible for 32-bit processors to work with 64-bit numbers, they need to use two 32-bit registers, and take twice as long to process them. The back-of-the-book version is that 64-bit processors can crunch larger numbers, faster. Audio/Video encoders, financial applications, games and database servers, rejoice! And we're not talking just Windows here...

In This Corner...

For the first time, it seems that GNU/Linux has given Microsoft something to sweat about (and not just in the eyes of fanboys)—64-bit Linux distributions were around and in use on servers long before the fumbling start of Windows XP x64 edition. Even standard excuses like "Windows has better driver support" fall flat on their face—64-bit drivers for Linux have been written by OEMs for just as long. More importantly, if you use or wish to use open source software, porting it to 64-bit Linux is as easy as recompiling it with an extra "-m64" in the command line. Of course, we're assuming that the code is written sensibly. What will happen then is that all the current 32-bit pointers will now become 64-bit pointers, allowing the program to access 64-bit memory addresses.

Windows XP x64, however, has a (debatable) edge over the Penguin. Since most of your programs will remain in their 32-bit states for a while, XP x64 includes a component called WoW (Windows on Windows, not *World of Warcraft*) that emulates a 32-bit environment for the program to run in. Even better, our informal tests showed negligible performance hits when compared to their performance under plain old 32-bit Windows.

The Penguin And Its Wings

If you really want a completely 64-bit PC, you should start window-shopping for Linux distributions. All of them are available in 64-bit versions, and differ only slightly—if at all—from their 32-bit versions (which we've tested this month).

Our Guinea Pig:

AMD Athlon64 3000+

ASUS A8N-VM motherboard with on-board sound and Ethernet

1 GB RAM

250 GB SATA hard disk

NVIDIA GeForce 6600 with 256 MB RAM

We're quite impressed with how much GNU/Linux distributions have matured in this department. For example, when we tried Ubuntu 5.04 (Breezy Badger) on this same machine a few months ago, the only device that didn't show up as "Unknown" was the processor. With their new Dapper Drake release, 64-bit Ubuntu shines—sound and Ethernet worked out-of-the-box thanks to some nifty new kernel modules, with only one annoyance: Windows XP doesn't release the Ethernet card's resources even when you shut down your PC, so to switch from Windows to Linux, you need to

The History

While 64-bit computing reached our desktops only in 2003, it's been a good 15 years since the first 64-bit processor was used—the MIPS R4000, which was used to power high-end Silicon Graphics workstations that produced movie special effects. By this time, Intel's x86 platform had established a firm death-grip on the desktop PC, supported by the accelerating popularity of Microsoft Windows. A ridiculous number of applications were written for x86 (as is true today), and to try and introduce a whole new processor architecture into the desktop market was unthinkable—who was going to write all those applications again? 64-bit computing, then, found itself in areas like special effects, high-end servers, and research.

In 1999, AMD released an extension of the x86 instruction set, called x86-64, which assumed a 64-bit processor that would run the old x86 instruction set just as easily as it would a 64-bit instruction. This meant that *everything* you could run on a regular old x86 PC would still work flawlessly, and you could also run high-performing 64-bit applications.

Intel's IA-64 specification was released the same year, but it would run x86 instructions in a *compatibility mode*, which, well, are two words you don't want to say in the same breath as "high performance". AMD's Athlon64 processors hit the market in 2003, and have been showered with much love ever since.

While all of us rejoiced at the idea of moving to a 64-bit home PC with little or no hassle, much disappointment was expressed by the academic elite, who have been poking fun at x86 for years—mainly because there were far better processors than it, but without the advantage of popularity (must... resist... drawing... predictable... parallel...). Whether x86-64 was the right way to go is a battle that will rage for a while, but at least now we'll have 64-bit applications to keep us entertained while we wait.



The Fuel of The Hype....

switch off your PC from the mains for about 30 seconds before starting again. This, however, is quickly fixed with a kernel update.

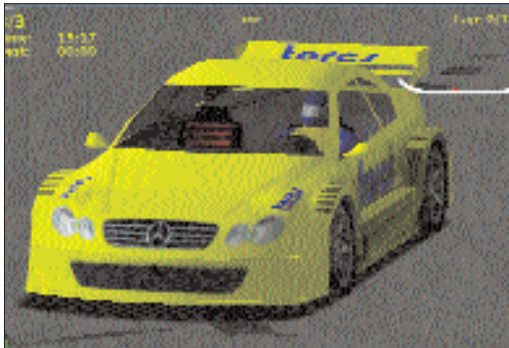
For newbies, we recommend Ubuntu 6.06 (Dapper Drake)—the graphical installation is simple and blindingly fast using the live CD, and nearly all your hardware will be supported—either through drivers supplied by the manufacturers or thanks to some well-written generic drivers.

For a more satisfying geek experience, not to mention a marked performance edge, you could try Gentoo. Take a weekend off, though—the build-everything-from-source approach is going to keep you busy for hours, and one false move means starting all over again. We've even seen reports of it taking 19 hours, which, at first, made us rather suspicious of our own time of nine hours. Next step: procuring all those 64-bit applications that will get the most out of your PC—all freeware or open source.

TORCS—The Open Car Racing Simulator

<http://torcs.sourceforge.net/>

While it passes itself off as a fun game, TORCS is also a platform for developers to test their abilities at writing intelligent robots they can pit against each other in a race. Porting it to 64-bit Linux means the AI calculations are going to be



faster, and as people start making more complex robots, we're going to see huge performance differences between the 32- and 64-bit versions.

Blender

www.blender.org

This extremely popular (and quite painful to learn) open source application is capable of creating some really enticing 3D graphics in the right hands, and a faster 64-bit edition means your creativity is going to take fruit sooner. Blender is available for both Linux and Windows.

Cinelerra

<http://heroinewarrior.com/cinelerra.php3>

Cinelerra is a very powerful Linux application for video capture, compositing and editing. It's one of very few applications that have been specifically written to take advantage of 64-bit CPUs, rather than just being ported from an old 32-bit version—in fact, you're probably going to encounter serious performance hits if you run the 32-bit code—loading uncompressed video into system memory isn't for the weak-processed. It will run on an

Athlon64, but what's recommended is a dual-core Opteron system. No, that wasn't a typo.

POV-Ray

www.povray.org

The Persistence Of Vision Raytracer is a 3D ray-tracing package that lets you create some incredibly photo-realistic scenes. What's unique and



challenging here is that you're going to write code that will eventually be translated into a 3D scene. You can get this for Windows as well.

And now, on to free stuff for Windows x64.

VirtualDub

www.virtualdub.org

You can now encode your videos from one format to the other with greater speed and the ability to load even more of your movie into the system's memory, taking away random skips while your hard drive is being read.

avast! Home Edition for Windows x64

www.avast.com

Our favourite free anti-virus just went 64-bit. Actually, avast! for XP x64 is a mix of both 64-bit and 32-bit code—this just to provide you with the added protection against 32-bit viruses.

Windows Defender

www.microsoft.com

Now in its second Beta, Windows Defender is a better “block spyware trying to come in” than a “clean up spyware that's already there” tool. And it's free. And it's 64-bit!

7Zip

www.7-zip.org

Another category of software that benefits from going 64-bit is compression. 7Zip is an open source compression program that packs files into the ZIP, GZIP, BZIP2 and TAR formats, and can unpack files from nearly all popular formats.

Should I, Shouldn't I

All isn't hunky-dory in the world of 64-bit software. For example, you'd expect a full 64-bit version of OpenOffice.org, but there isn't one—even the version that comes installed with 64-bit distributions is a combination of both. There also aren't 64-bit versions of much-needed programs such as Opera and Flash Player.

If you've been wondering whether you should shift to a 64-bit OS, you should—soon after making sure that all your hardware is supported—especially hardware like your old printer. Eventually, you're not going to have a choice anyway. So welcome to the new world! (Don't bonk your head on your way in.) ■

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Xbox

Gamer heaven comes ever so close as we get our mitts on the sorely-awaited Xbox 360



All-Round Joy

Nimish Chandiramani

Long, painful months have passed since ole M-Dollar teased us with the assurance that the Xbox 360 would indeed make its way into India—by the legal channels this time. Meanwhile, gamers in the West indulged in insane crimes just to get close to one of these. Finally, now, our tears have paid off—we got us an exclusive look at said 360—something you lot will have to wait for till *Diwali*. {Insert evil laugh here}

Look At Me!

You can't deny it—the 360 is the best-looking thing we've seen in a while, and looks like something that would be preceded with an "i". The ring around the power button lights up 90 degrees at a time—one for each controller you connect—thus completing the 360-degree Ring of Light (forgive us for being so dramatic). Obviously, meticulous thought went into making it a treat for the eye. While it's smaller than its predecessor, it's still bigger than the PS2, and comes with a huge power brick in tow that could knock someone's coconut off if they didn't watch it. Its vertical nature will still save space in your entertainment area, so there's no need to worry.

The front panel is neat, and has two memory card slots in case you opt for the hard drive-less Core System. As of this review, Microsoft isn't planning to release faceplates for the 360, so if white doesn't cut it for you and you want to customise it to your taste, you will have to settle for bootlegged ones that will inevitably find their way into the grey market post-launch. Still, the console looks good enough without a custom faceplate.

Touch Me

One thing we were quite curious to find out was how Microsoft was going to improve on its much-disparaged controller, and we're quite



Dead Or Alive 4

impressed. The controller is compact and feels like it's been in your hand forever. The left analog stick is *exactly* where it should be—you don't need to stretch your thumb at all. While this is a slightly alarming break if you're used to the PS2, you'll soon realise that the chances of your thumb fatiguing after the inevitable long hours of gaming are much lower with such an arrangement. The sticks are quite loose to the touch—they don't offer as much tactile feedback as those of the PS2, but they're nice and responsive nonetheless.

The analog triggers at either side are well-placed, but they do have a larger dead zone than expected—kicking into action only after being depressed more than half-way. The D-Pad is probably the only negative about the controller—it's slippery at times and is generally unimpressive.

Controllers are available in both wired and wireless flavours (which run on standard AA batteries), depending on how much you're willing to cough up for your 360. Wireless controllers bond with the main unit by a press of a button on both the controller and the box, and have a ridiculously large range: unless your living room is the size of a cinema hall, it's unlikely you'll be facing any problems with them.

Play Me

We had four titles to test the system with—*Project Gotham Racing* (PGR) 3, *Dead Or Alive 4*, *FIFA World Cup Soccer*, and *Kameo: Elements of Power*. When we fired it up on a regular TV, the results were, well, underwhelming. Granted, of course, that the 360 churns out frames with more enthusiasm than dentists brush their teeth with, but on an ordinary TV, the result doesn't elicit many oohs and/or aahs. Hook it up to a wide-screen HDTV (ours was Samsung), set the resolution to 1080i, and different tunes are sung. Clearly, no unnecessarily tall claims have been made about the 360 being optimised for HDTV—the games look exquisite! This marked difference comes with a flip side, though. If you already own a console but don't own an HD-capable TV, you might want to dip into those pockets a lot more for an HDTV to get the most out of the 360—or just stick with your current console.

As for the multi-core Xenon CPU from IBM, coupled with the custom-built graphics chip from ATI, they come together to dish out frame-rates smoother than well-buttered ice rinks. In

The latest in Team Ninja's series of combat games for hormonally-charged teenagers is the first of its kind to really show off the Xbox 360's abilities. It's more than just a button-mashing fight fest—it's a button-mashing fight fest with some very scantily clad women who satisfy just about any fantasy you may have had as a teen and still might have today. Hormonal stimulation aside, there's a lot about this game that is quite impressive.

First on the block is the level design—all fighting arenas have been designed in intricate detail, even paying attention to bystanders who have absolutely no role to play in the fight. Environments are huge and immersive, and you'll never find one of those "invisible walls" that confine you to a particular area for gameplay.

The gameplay itself is far beyond punching random buttons—it'll get you past the easier levels, but you'll find yourself stuck soon enough if you don't learn the complex counter-attack system that this game sports. It's not as easy to figure out as we'd like, though—patience is the key here. The game shines as a multi-player—hook up all four controllers and prepare yourself for endless hours of team vs. team fights.

There's only one thing about this game that contributes to its success—the women. Each one is built with



one or more unrealistic male fantasies in mind, and the 360's brilliant graphics bring them to life like nothing else could. It's an ordeal to look beyond that and actually analyse the game underneath the game—and unless you're going to review it for a magazine, it's an ordeal you won't undertake.

For all it's worth, there's even a story to this game, and each of the 16 characters you can play as has a different part in a much bigger tale. All that is utter nonsense—the so-called story is little more than an excuse to unlock videos of characters, featuring them in all their near-naked glory.

This title is sure to fly off the shelves into the hands of young teenagers, but is liable to fly back just as fast in the hands of some very cheesed-off parents.



all the games, no matter how many hours we put in (and many hours we did), we never once saw a game skip, or even come close to doing so. Ultimately, it's like gaming on a top-of-the-line PC—one whose graphics card will cost you considerably more than the Xbox itself. Whether this is good or bad really depends on how much else you do on a PC besides gaming.

All this blistering performance does come at a price, if the amount of hot air that spews from the vents at the back is any indication. Heating components are hardly surprising, but before you reach for your wallet, you need to make sure you choose the space for your new love with heat dissipation in mind. Don't get any crazy ideas into your head—like confining it in its own cabinet; all the complaints we heard about the 360 being unstable more often than not stemmed from nitwits who kept it locked in a box and on all day.



The whole kit and kaboodle—the Xbox 360 System will contain all this, sans the game titles

Not that you should waste your 360 playing movies, but it makes for a pretty competent DVD player as well. Navigating the various menus using the controller feels quite strange, but not too hard to get used to. The Xbox 360 system will come with a media remote included for your convenience as well.

Little Things Matter

We'd rather have skipped the little bells and whistles, but small though they are, they can hardly be ignored. The first to earn the favour of our lazy behinds is the fact that you can shut down the console from the controller itself. After a hard day's gaming, the last thing you want to waste your time doing is walking over to the box and hitting the button—just shut it down from the comfort of your chair and doze off!

Another noteworthy thing is the customisation the Xbox dashboard gives you based on the user profile you create. It lets you select themes, personalise your Xbox settings, and keep track of your progress and achievements in each game you play.

Launch Pad

When the Xbox 360 launches during the pre-Diwali season, it will be available in two flavours—the no-frills Core System and the Xbox 360 System.

The Core System will come with the Console, a Wired Controller and a Composite AV Cable—you'll have to spring for the HD AV cable if you want hi-def joy. Add one leading game title to this and the lot will set you back an estimated Rs 19,990.

The Xbox 360 System (the one we got for testing) comes with the Console (with a shiny Premium Chrome Finish, even), a 20 GB hard drive, a wireless controller, a Universal Media Remote for when you whip out the popcorn and DVDs, a Component HD AV cable, and an Ethernet cable. All this and prolonged joy for the expected price of Rs 23,990.

Twenty titles will accompany the launch. The list isn't final yet, but we're willing to bet it will include *Perfect Dark: Zero*—the title that will sell the console while we wait for *Halo 3* to hit the scene.

As we write this, we have no information on whether Xbox Live will launch at the same time as the 360: watch this space for the dope as it happens. Xbox Live is a key part of the 360's success, and it would be a shame to miss out on it, especially with nearly all games being "Live-aware" and giving you the ability to socialise with (or smash the dickens out of) players all over the world.

In Toto

We're completely blown away by the Xbox 360 (as if we didn't expect it)—tremendous performance, a brilliant controller, and high-definition eye-candy that will make you shun gaming on a regular TV.

What concerns us is the money that you'll be shelling out—not just the cost of console itself: you'll eventually need to spring for an HDTV and an elaborate surround sound system, not to mention the probable bomb (Indian prices for titles haven't been set yet) that each title is going to set you back by.

The lack of Xbox Live is also quite the disappointment, and we do wish to see it soon after the launch, if not at launch time itself. If the launch collection is the same as those in the international launches, there's little to look forward to, but since many more titles have been released since then, we might be in for a very enticing list—we'll keep you informed as it unfolds.

Today, being able to afford the 360 and not going ahead and buying it seems unthinkable, but that might change with the launch of the PS3. Even so, you won't be sorry coughing up for this baby. ■

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Memoirs Of Memory

A look at the past (DDR) and insights into the present (DDR2): how RAM is shedding the shackles of bandwidth, and more

Michael Browne

With AMD's jump on the DDR2 bandwagon, DDR SDRAM will ultimately find itself on the road to oblivion. Intel made the transition to DDR2 a few years ago with their 915/925 chipsets. With the end of the road for DDR memory clearly in sight, it's time to take a look at it in greater detail. While doing so, let's take a look at what's replacing it!

analyse why exactly the change was necessary. Let's look at the major problem all processors face today: the data transmission rate, or bandwidth. The performance of any PC depends upon just five major devices—the CPU, the chipset/motherboard, the RAM, the graphics solution and the hard disk(s). It's a known fact that the hard drives are by far the most serious bottleneck as far as data transmission goes. However, the processor and graphics card on a PC are fed directly by the system memory, and due to the speed limitations that plague RAM (even today) and latencies, another bottleneck emerges.

With today's gigahertz CPUs and dual and quad cores, number crunching is never going to be an issue, and

Was The Switchover Warranted?

DDR or Double Data Rate SDRAM is so called because data is transferred twice per clock, once each for the crest and trough edges of a signal. In comparison, earlier SDRAM could only manage one transaction per clock. The data transfer rate is therefore twice as much as the frequency of the memory cells, that is, 200 MHz DDR memory is called DDR 400.

Before we get into the details of one architecture and the pitfalls of another, it makes some sense to

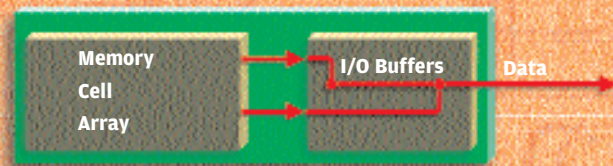
the main challenge remains supplying these processors with sufficient data to satiate their enormous appetites. The RAM is that vital link entrusted with supplying this data, and the performance of the memory used in a PC will directly impact the overall system performance. In fact, it's not uncommon to find enthusiast users with 2 and even 4 GB of memory configured in dual-channel mode. Why? Quite simply, to ensure speedy performance! When a user says "PC performance upgrade," eight times out of 10, he means a memory upgrade, making

this component one of the most frequently upgraded.

To represent bandwidth in a simple formula: Bandwidth = Frequency x Bus Width.

“Frequency” here means the rate of data transfer, (mostly measured in MHz), while bus width is measured in bits and represents the width of the path that the data flows through. Try to visualise RAM as a highway with multiple lanes. Traffic could be regarded as data. The wider the lanes, that is, the bus width, the more data can pass through in a given amount of time. Conversely, greater data speed (the speed of the traffic) will give the same result—more throughput. The first assumption about increasing the bus width of the memory isn’t practical for all purposes. Memory width remains at 64 bits (remember it’s DDR, so that’s actually 32 x 2).

DDR 1 Memory Multiplexing



DDR Data flow diagram: note the 2-level multiplexing at work, represented by the two red data lines flowing into the I/O Buffer

Power consumption-wise, DDR2 is the hands-down winner, with a 1.8 V operating voltage as compared to the 2.5 V that DDR requires. The consumption of power will only increase as density (in gigabytes) of memory modules increases. For example, 4 GB of DDR memory would consume close to 40 watts of power for every read operation. Keeping in mind the universal drive for power gains through saving, DDR2 keeps environmentalists happy as well!

Another important advantage is DDR2’s for the taking: due to its lower power consumption, much higher-density modules will be possible, and DDR2 memory can be available in 2 and 4 GB densities on a single DIMM! This is also possible due to the fact that DDR2 chips use an FBGA (Fine Ball Grid Array) packaging, while DDR utilises the older, albeit cheaper, TSOP (Thin Small-Outline Package) packaging, which was a serious hindrance to speed increments due to the inherent high resistance and inductance capacity in TSOP.

Architectures: DDR And DDR2 Compared

Let’s look at a simple illustration showing data flow in DDR memory:

As we can see, there’s a multiplexing of sorts taking place, since each bit from both pipelines is being fed onto the same output line. Here, “multiplexing” quite simply means sending multiple streams of data (let’s look at it as a single bit of data for simplicity), at the same time and on the same stream, which are collated in the Input/Output buffer. We therefore have two bits at the end of one clock cycle for DDR memory. What happens is that both bits of data are captured at separate stages, fed into the pipeline, and then moved to the data bus, one each on the peak and trough clock signals. Each of the pipelines are 32 bits wide (there are two of them); the memory bus width is therefore 64 bits.

DDR2 RAM follows the double-up principle, by doubling the number of bits fetched from the data pipeline. The pipeline has been streamlined further to a 16-bit architecture, and the multiplexing principle is taken to the next level with four bits being supplied at each peak and trough. Therefore the 64 bits on a module are comprised of simultaneous transmission from each of the four banks.

Let’s look at this in more depth. There are three different frequency values we need to

For example, DDR 400 MHz memory runs at 200 MHz internally (200 x 2 because it’s DDR), while the bit width is 64, which gives us a bandwidth figure of 3200 MBps. In megabits, we’d get 400 x 64 = 25600 megabits per second. To arrive at the figure in megabytes, 25600/8 = 3200 (MBps or megabytes per second). DDR 400 MHz memory is therefore also called PC 3200 RAM.

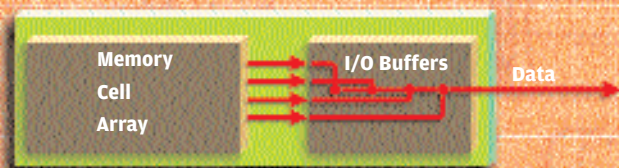
If we look at the bandwidth figure of a 32-bit, 3.2 GHz processor:

$3200 \times 32 = 102400$ Mbps, or 12800 MBps.

Add to this the fact that memory has a latency—a wasted-clock-cycles figure that is astronomical as compared to that of a processor—and it’s no wonder that even the fastest memory available bottlenecks today’s CPUs.

DDR peaks out at 500 MHz, with some manufacturers going into the 550 MHz realm. But the problem was, DDR architecture was left with no headroom for future speed-ups. Although almost no amount of bandwidth increments will bring memory anywhere close to satisfying the processor’s bandwidth requirements, DDR2 seems like a step in the logical direction, offering steep increments in raw clock speeds at least. With DDR2 promising that 1066 MHz will become mainstream by late 2007, and 800 MHz already available in goodly doses, it seems right on track to greet the latest monsters from Intel & AMD—the Conroe and AM2 processors respectively.

DDR 2 Memory Multiplexing



DDR 2 data flow diagram: Four tiers of multiplexing at work, I/O Buffer speed is also twice the DRAM frequency, unlike DDR RAM, which is synchronous

understand. First we look at the core frequency/clock, which represents the actual speed of the DRAM chips. In the case of DDR 200 MHz memory, the core speed is 100 MHz; in the case of DDR 400 memory, it is 200 MHz.

Then we have the clock frequency, also called frequency of the I/O buffers. For DDR memory, the I/O buffer speed is synchronous with the DRAM frequency. However, for DDR2 memory, the I/O buffer speed is twice that of the core. Therefore the I/O buffers need to be supplied with twice the amount of data that the DDR memory buffers require, to avoid serious latency issues. This is exactly why the multiplexing level in the case of DDR 2 memory has increased to four, twice that of DDR. In the case of DDR memory at a core speed of 200 MHz, your I/O buffer speed is also 200 MHz, and the data speed becomes 400 MHz. In the case of DDR2 400 MHz memory, the data frequency and the I/O buffer remain identical, at 400 MHz and 200 MHz respectively. What changes is the core speed. It's down to 100 MHz! Remember what we said about the relationship between core speeds and I/O buffer speeds? Well, for a core speed of 200 MHz, the I/O buffer frequency becomes

400 MHz, and the data frequency becomes 800 MHz.

Looking at these figures, the difference is glaring—at the same core/DRAM speeds, the bandwidth effectively doubles!

The Role Of Latency

One of the most important characteristics of memory and a significant performance-affecting factor), is latency. Latency can be quite simply defined as wasted clock cycles. It occurs since DRAM memory cells have to continually refresh themselves. Latency, therefore, basically represents delay; it's the time taken for the memory to get ready for a fetch or deliver data transaction. There is also a certain amount of unavoidable latency that occurs between the activation of a column or row, due to the time required to set up the addresses of the same. Note that latency is an omnipresent factor; it can only be minimised, and never completely done away with.

Now latency is directly proportional to clock speeds, so when a MHz bump occurs, the latency figures also rise. Let's compare a DDR 400 and a DDR2 400 MHz module. Typical latencies would be 2.5-3-3-6 for a DDR 400 MHz module, while a DDR2 400 MHz would only manage 3-4-4-8, making it slower as far as data accessibility goes. So DDR 2 scores bandwidth-wise, but loses out latency-wise. A paradoxical situation, with only one solution—bump up the clock speeds further. And DDR2 has done exactly that, delivering 667 MHz and 800 MHz, with 1066 MHz promised in the near future. With AMD 64's efficient memory controller and Intel's Conroe's bumped up FSB speeds (1066 and 1333 MHz), this extra bandwidth will go down real easy!

What's New... About DDR2?

In addition to the additional bandwidth DDR2 provides, and its superior technology (TSOP is inferior to the FBGA packaging), savings in

RAM Latencies—What All Those Figures Mean

So we know that latency-wise, DDR2 is slower than DDR memory. Latency figures are measured as 3-3-3-8, or something similar, and most users are lost when it comes to the meaning of such figures.

The figure 3-3-3-8 represents delay. The smaller these values can get, the faster the memory is (clock speeds remaining constant, of course). It's worth noting that these figures represent the minimum latency, meaning the timings cannot get any smaller, that is, tighter. DDR 400 MHz memory at timings of 2-3-2-6 would, for example, be much faster than similar memory at 3-3-3-8 timings, simply because the latency is reduced. Reduced latency leads to what is called "tighter timings" by enthusiasts.

The first figure in the above example is the most significant speed-wise. It represents the CAS or Column Address Strobe latency figure.

As we know, RAM first has to read a command sent to it, and then output some data based on that command. The CAS represents the delay between a registered read and data output. It's measured in clock cycles. Therefore a CAS latency value of 3 means three clock cycles will complete

before data is ready to be sent forward. CAS Latency is often abbreviated as CL.

The second figure (the second 3 in the example) represents the RCD or Row - Column Delay. It is defined as the number of clock cycles required between RAS and CAS. As latency, it's the delay between defining a row and column in a particular memory block, and the read/write operation to that particular location.

RP is the Row Pre-charge time. It's denoted by the third 3 in our example. In memory, each row in the bank needs to be closed, that is, terminated before the next row can be accessed. The RP represents, in clock cycles, the time needed to terminate and open a row of memory (open being the current state), and to access the next row.

RAS stands for Row Address Strobe. This is the last number in our example, i.e. 8. There is a delay between requesting of data and the actual issue or a pre-charge command. This difference is basically the amount of clock cycles spent in order to access a certain row of data in memory. This delay between data request and pre-charge is called RAS or active to pre-charge delay.

power consumption, and reduced thermal specs, there are also a number of new features inherent in DDR2. These are basically refinements that make DDR2 better, sort of an evolution over DDR1. Let's take a look at some of these.

1. ODT (On Die Termination): Perhaps one of the major drawbacks to extracting more speed (MHz) out of memory. Any signal moving along a bus reflects to a certain degree when it hits its intended target. These signal directions could go either way along the bus, and the reflected signal (or mirror signal) causes interference in the original signal, or could even cancel out the original signal depending on the original signal strength. This is where ODT scores, big time! DDR2 simply introduces a termination point to the original signal (DDR doesn't have ODT—refer to the features table above) once it has reached its target, by adding a resistor to ground it. This eliminates any reflection voltage as the resistor simply swallows up any signal voltage coming its way.

2. Posted CAS: Another necessary feature that DDR2 implements, whose basic aim is to eliminate data collisions along the bus. This is especially significant for DDR2 because of the high clock speeds involved, which increase the chances of collision. The command bus is responsible for issuing commands. A command buffer is placed on the DRAM chip that "bundles" these commands, that is, holds a command and schedules it for a later release. Therefore the command is pre-issued and stored, but the read operation is postponed. The command bus is freed from the burden of addressing exactly when to release that particular command. It can now activate the next bank. This delay is called Posted CAS. The delay that is specified during initialisation of the DRAM chip is called Additive Latency or AL. This, however, does play a part in increasing latency a bit; the read latency now becomes the sum total of the CAS latency and the Additive Latency. This isn't too detrimental to the bandwidth, however, because the command is issued early.

3. OCD (Off-Chip Driver) Calibration: DDR memory introduced the principle of clock forwarding. A single data strobe signal was used. The function of this strobe is to minimise signal skewness ("skewness" means deviations from the ideal curve that a signal is supposed to follow). Note that some amount of skewness is normal and cannot be avoided, but the goal

here is to minimise it, not eliminate it. This single strobe signal is compared to a reference point signal, which is predetermined. The problem of comparison becomes worse because the degree of skew is also never the same, and may change from clock to clock.

DDR2 introduces a bidirectional, differential strobe. This ensures higher signal integrity because it allows the two strobes to be calibrated against each other, as opposed to DDR, which simply calibrates on the basis of a reference point signal. With two reference points, skewness is minimised, and therefore even at higher frequencies, signal integrity is maintained.

Intel And AMD: Who Benefits More?

Looking at the comparative architectures of the Intel and AMD processors, it's quite easy to draw the conclusion that Intel CPUs are more memory bandwidth sensitive, rather than latency sensitive. In other words, an Intel processor performs better at higher DRAM frequencies, despite the higher latencies. In other words the Pentiums and their ilk are MHz demons, both clock-wise and memory requirement-wise!

The AMD 64 architecture is slightly different. AMD's 64-bit range has an integrated memory controller, which effectively negates the latencies that occur between the CPU and the Northbridge (where the MCH a.k.a. Memory Controller Hub typically resides). Due to this, AMD 64s become extremely latency sensitive, and such systems give blistering memory bandwidth scores. The controller can be as much as 90 per cent efficient when memory with tight timings is used. Compare this with Intel processors: their MCH isn't anywhere near as efficient. To make up for the efficiency of the controller, Intel processors need faster memory. They are perfect candidates to make use of the 800 MHz and 1066 MHz speeds that DDR2 dishes up.

This does not mean that AM2 processors are lacking in any way. In fact, the memory controller being efficient means that AM2s will be able to do wonders with the increased bandwidth. Although the latency will hit AMD harder, the silver lining is that DDR2 memory is continuously being refined, and memory with faster timings are being introduced every few months.

The drive for DDR2 is an obviously warranted one. The memory industry as a whole is still in a state of flux, with new technologies emerging and improvements being made. All this to feed the immense bandwidth requirements of today's users. Yes, that's correct, it's we users and our applications that drive the hardware industry as a whole, and not the other way round! The fact that DDR2 might well be a stop-gap for three to four years should also not escape you, with new technologies like DDR3 promising an emergence into the mainstream memory market. Remember when people said nothing could beat Dual DDR 400? Well, it just got beat—all the better for us! ■

michael_browne@thinkdigit.com

DDR And DDR2 At A Glance		
SPECIFICATIONS	DDR	DDR2
Clock speeds	200/266/333/400/500	400/533/667/800/1066
I/O Buffer frequency	100/133/166/200/250	200/266/333/400/533
DRAM core frequency	100/133/166/200/250	100/133/166/200/266
Prefetch size (in bits)	2	4
Voltage (volts)	2.5	1.8
Data strobe	Single DQS	Differential (DQS and /DQS)
Packaging	TSOP/TSOP 2	FBGA
Support for ODT	N	Y
OCD Calibration support	N	Y
Posted CAS	N	Y

Antelligence!

The idea of large groups of simple nanobots acting together, under the influence of their collective intelligence, leads to exciting as well as dire prospects

Ram Mohan Rao

*Go to the ant, you sluggard;
Consider its ways and be wise!
It has no commander,
No overseer or ruler,
Yet it stores its provisions in summer
And gathers its food at harvest.*

—Proverbs 6:6

Google “grey goo”. You’ll find the definition, one of which is “Gray goo is a mass of small, destructive, self-replicating nanorobots.” But amongst other things, you’ll find, in the results, “fear of runaway robots”; “the grey goo threat”; “worse than grey goo”; and yes, even “the end of the world may be nearer than you think.” Clearly, grey goo is not a thing you’d like to be associated with.

This variety of *goo*, according to some, will be the way the world ends. We’ll have more to say about grey goo later; for now, we’re hoping that swarms of nanorobots will remain under control and do our bidding—exploring planets, repairing arteries, and other noble deeds.

So how did we get from ants to nanobots—robots so tiny they’re measured on the nanoscale? It’s scientific, as you’ll find out. Let’s get back to the ant.

Having no commander, the ant yet gathers its food. This is a marvel of nature: does an ant even have a brain? Even if it does, it doesn’t go a long way in helping the ant gather its food. What helps the ant more is the fact that it is part of a larger entity called the hive. *The*

hive exhibits intelligence that an individual ant is incapable of by itself—the whole is greater than the sum of its parts.

Philosophy alert! Did we just touch upon a contentious issue? We did, apparently; we can already hear the clamours from those who disagree. Yes, wholes and holism and reductionism are touchy subjects, and we will not veer where many philosophers have gone before.

Back to the ant again: our glorification of that creature is not to imply that the bee is far behind. Each individual bee is reasonably dumb, but a hive of them can be dangerously co-operative. This we naïvely attribute to “collective intelligence”. We are re-stressing our point, but the concept is essential. And “It turns out that what makes sense in the biological world often makes sense in the computational world as well,” confirms Christian Jacob, leader of the Evolutionary and Swarm Design Research Group at the University of Calgary, Canada.

So what does all this have to do with computers? Not much as graphics cards go, but it has a lot to do with the idea of swarm intelligence (SI). If you like formal definitions, SI is the property of a system whereby the collective behaviours of unsophisticated agents interacting locally with their environment cause coherent functional global patterns to emerge. In English, SI is the idea that a large number of relatively stupid things can together exhibit useful, intelligent behaviour.

This is a story about how the group behaviour of insects and other fauna led scientists to dream of expansive swarms of tiny robots doing useful work.

Illustration: pravin warthokar



The Flight Of The Nano-Bee

Some time from now—it could be anywhere between five and twenty years—we might or might not see “roboswarms” all around us. Given that, we ask: what will the roboswarms be doing? What will each nanobot be like? And why might we *not* be seeing them? These are pertinent questions, and it is our purpose here to answer them.

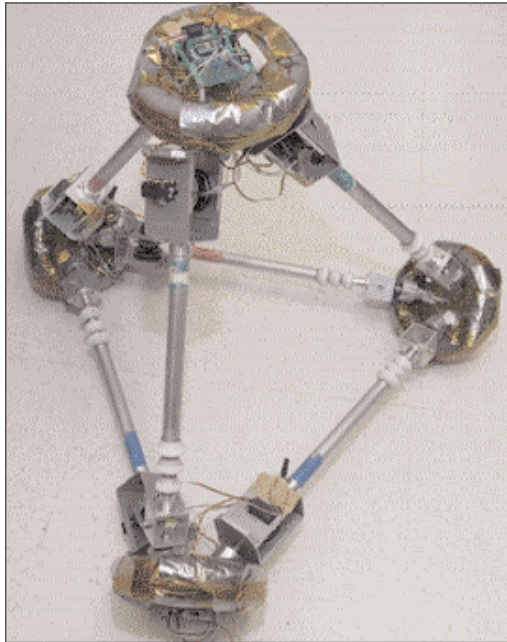
Intelligence in any form is valued by scientists: they notice it, then they study it, then they model it. We’re not talking about artificial intelligence—in fact, we happen to be talking about *natural* intelligence. Mankind has observed a lot of things in nature, including the stars with their patterns, the migration of birds, the evolution of chimpanzees into George W Bush, etc. One such thing was the social behaviour of insects and birds. Ants foraging for food, birds flying in formation, schools of fish swimming and turning together, are all examples of “swarm behaviour”—behaviour that reeks of intelligence, and which has therefore been studied and modelled by computer scientists. The verdict is out: the resulting “swarm intelligence” can be applied to a number of problems and situations, such as optimisation, certain military scenarios, robotics, and more.

That last got us interested, so we decided to investigate.

Robotics and insect swarms taken together would mean, well, useful swarms of insect-like creatures. What might such things do? They could explore the surface of Mars, for a start.

In 1999, the Mars Polar Lander failed. It was, like so many technological edifices today, monolithic: when one thing fails, everything else sinks with it. Instead, imagine a roboswarm trying to explore the planet. It could spread out into different areas: some in the sky, some burrowing into the ground, some cruising along on the surface. If a few of the members of the swarm failed, there would be no problem—does an ant colony shut down shop if a few ants die? The swarmbots would have their sensory apparatus in place, and they would gather data: about soil composition, about temperature, humidity, gases, and so on. Each swarmbot, we’re assuming, will have transmitters in addition to sensors, so all this data would be transmitted to someplace useful—like a central database, which could be on earth. No Mars Lander, no mess, no fuss!

Indeed, NASA has plans. Their Web site talks of a shape-shifting robot called the TETwalker (because it’s a tetrahedron) as follows: “Engineers at NASA’s Goddard Space Flight Center... (success-



The TETwalker robot at NASA’s Goddard Space Flight Center. Such bots will be miniaturised and grouped together, to be deployed as swarms!

fully tested) a shape-shifting robotic pyramid. Robots of this type will eventually be miniaturised and joined together to form ‘Autonomous NanoTechnology Swarms’ (ANTS) that alter their shape to flow over rocky terrain or to create useful structures like solar sails.” We gather that since NASA is talking about shape-altering ANTS, the idea that a roboswarm can do something useful can’t be all stupid.

Nanoswarms are some way into the future, but we’ll see a swarm of *baseballs* tested right this year! July 20, it was reported that a team of MIT researchers led by Prof Steven Dubowsky has conceptualised a swarm of baseball-sized bots to explore the Martian surface. Several thousands of them would explore difficult terrain, going where no probe has gone before—merrily rolling and bouncing away! Each “ballbot” would carry environmental sensors and cameras. They would communicate by forming a LAN, and a base station would relay their data to Earth. A prototype of the swarm will be soon tested on this planet.

From Darkness Unto Light

We’ve been a little too informal here, so a definition is called for: “Swarm robots are more than just networks of independent agents, they are potentially reconfigurable networks of communicating agents capable of co-ordinated sensing and interaction with the environment.”

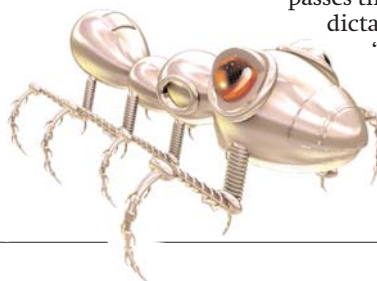
How are each of these nanobots—the “agents”—aware of each other, and how do they co-operate for the job they’re doing? That’s precisely where SI comes in. As Yang Liu and Kevin Passino—whom we quoted above—say in *Swarm Intelligence: Literature Overview*:

“The agents use simple local rules to govern their actions and via the interactions of the entire group, the swarm achieves its objectives. ‘Self-organisation’ emerges from the collective actions of the group. SI is the collective intelligence of groups of simple agents... The autonomous agent does not follow commands from a leader, or some global plan. For example, for a bird to participate in a flock, it only adjusts its movements to co-ordinate with the movements of its flock-mates.”

The autonomous agent is the Ant in the Bible, but how *exactly* can intelligent behaviour emerge from simple interactions? It’s complex, but an example should suffice. Think of streams of ants converging towards a speck of food. You’ve seen it: the ants are all moving in various directions. They sometimes go straight, and sometimes they turn. It’s been proved that they’re as likely to turn left as to turn right! Then one ant finds the food. Its duty is to rush back to headquarters and report the find—and herein lies its simple intelligence: it can follow its own trail to go back to where it came from. While doing so, it deposits a “food” pheromone along the way. The next ant that passes the pheromone will follow it—ant instincts dictate that they move in the direction of

“food” pheromone. This second ant returns, and the pheromone along the path is now twice as strong-smelling.

It’s now twice as likely for the next passing ant to take that path, and so on until the entire colony gravitates towards the food the first ant found.



Underneath this, we find something more interesting: ants can find the food closest to them—meaning more chances of successfully transporting it home! How? It's simple: a given ant has a certain amount of pheromone inside it, and the ant that finds the closest food source can leave behind more of the pheromone. (The ant that finds food far away will have its pheromone exhausted by the time it gets home.) As a result, the colony gravitates towards not just any food, but towards what food is closest to them!

On the surface, the ants seem to be searching for food and finding it effectively. But backstage, it's all probability and pheromones. This isn't the whole story, but here's one way intelligence can come from simplicity.

Essentially, the ants "self-organise." Self-organisation refers to the fact that "good" patterns and configurations—as in the ants finding the nearest food—emerge from interactions between ants, and between the ants and the environment. These interactions must, naturally, be conducive to the emergence of intelligence: for example, Darwin would quickly kill off a species of ant where individuals simply lunched on the food they found.

We, Robots

Intelligence emerging from group activities is fine, but what about the individuals themselves? Leaving behind ants and/or bots for the moment, let's just call them "agents." So each agent's properties sheet would read something like the following.

Alignment: Each agent has the ability to align itself with the others: just find all the agents in the vicinity and average where they're headed. Then align yourself in that direction. Except for the first agent, who is headed god knows where, every other agent gets aligned because its neighbour is aligned because its neighbour...

Cohesion: An agent can approach, and form a group with, nearby agents. Find some of your neighbours, figure their "average" location, then move to that location.

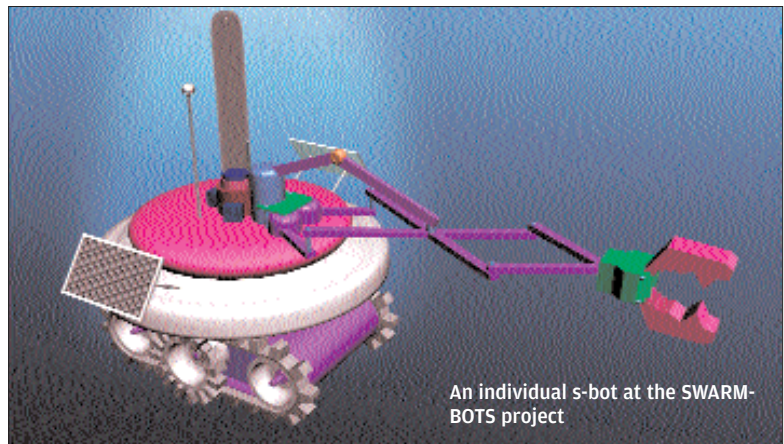
Obstacle avoidance: An obvious requisite. Have you ever seen an ant bump into a wall, then go back, and bump into the same wall again? Well, it does seem like ants have an inbuilt obstacle-avoidance algorithm, and any agent participating in a swarm needs one.

Separation: The ability to maintain a distance from nearby agents. This prevents crowding, which allows the agents to scout a wider area.

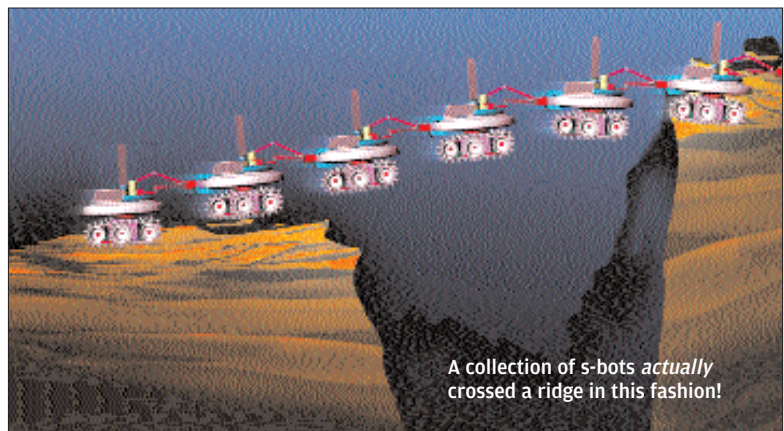
That's about behaviour intra-swarm. As for interactions with the environment, if we're talking about a little robot, it would need equipment that enables it to take *in* things from the environment—such as solar cells for power, sensors of various kinds, and more—and it needs to be built such that it can contribute *to* the environment: it needs grippers, wheels, and so forth.

Born To Bond

Summing up what we've said thus far: each robot needs to have some means and characteristics by which it can act as part of a swarm. Intelligence and useful behaviour can emerge from the swarm, and what kind of behaviour emerges depends on the properties of each member. The idea is to design little bots such that a swarm of them can



An individual s-bot at the SWARM-BOTS project



A collection of s-bots actually crossed a ridge in this fashion!

do something useful. And various uses for robotic swarms have been envisaged, including terrestrial, outer-space and submarine exploration.

SWARM-BOTS was a project funded by the Future and Emerging Technologies programme of the European Community. Its focus was "self-organising, self-assembling, biologically-inspired robots." The project calls the swarm itself a "swarm-bot," which is an aggregate of s-bots. See illustration above: the little critters can self-assemble by connecting and disconnecting from each other using their claw-like grippers! The SWARM-BOTS project hoped to create groups that could "explore, navigate and transport heavy objects on rough terrains in situations in which a single s-bot would have problems to achieve the task alone."

Each s-bot itself has limited computational power, but apart from that, the spec-sheet of the s-bots is impressive. Each has "proximity sensors, light sensors, accelerometers, humidity sensors, sound sensors, an omni-directional colour camera, force sensors..." The swarm-bot as a whole was designed to reconfigure itself as and when needed: for example, falling into single file to go through a narrow passage. The project mandated that the swarm-bot aggregate should form as a result of the collective intelligence of the s-bots, rather than hard-coded rules.

Potential applications for the s-bots include space exploration, rescue searches, and underwater exploration. The project ended in March of last year; what came of it? Did the s-bots form swarms and explore Mars? Of course they didn't, because they were never sent there. One of the things that

did happen was that, as in the artist's impression above, they were able to cross a gap in a ridge by holding on to each other. They aggregated; they moved in a co-ordinated fashion; they lifted heavy objects, as promised; they navigated rough terrain; and did many other things worthy of a second round of applause. If you're not on dial-up, see www.swarm-bots.org/index.php?main=3&sub=35&conpage=s41r for videos of s-bot(s) on various kinds of terrain.

The Real Deal

If a swarm is to do undersea exploration, you can't have a piddling ten s-bots holding hands and singing. What you need is a *real* swarm, with the measurements in the nanometres and the numbers in the millions—read nanotech.

Intelligent Small World Autonomous Robots for Micro-manipulation, or I-Swarm, is a project at the Institut für Prozess Control and Robotics of the Universität Karlsruhe in Germany. It aims at facilitating the mass-production of microbots. These are expected to be deployed as swarms consisting of up to a thousand units, and the researchers expect the swarm to be able to do lots of things, including micro-assembly and biological, medical, and cleaning tasks. (No, these bots won't be sent to Mars either.) Amongst the broad objectives of the project are to demonstrate collective task execution, to showcase the collective intelligence of robots, and to "use advanced sensors and tools for manipulation in the small world."

The artist's impression below is of the bots being designed at I-Swarm. They're a few millimetres large, and are pretty basic in structure as well as capabilities. This project extends to 2008: be sure to check back in this space to find out what happened! If your band is broad enough, visit <http://dsc.discovery.com/news/media/swarmrobot-video.html> for a video of cute little swarmbots doing equally cute things.

Then, there's the Smart Dust project on at the University of California at Berkeley. This one aims at building a "millimetre-scale sensing and communication platform for a massively distributed sensor network. This device will be around the size of a grain of sand and will contain sensors and bi-directional wireless communications, while being inexpensive enough to deploy by the hundreds." So what would the grain-sized sensing device do when deployed by the hundreds? Lots of things, possibly.



Yes, personal privacy is getting harder and harder to come by. Yes, you can hype Smart Dust as being great for big brother. Yawn. Every technology has a dark-side deal with it

Kris Pister
Professor of Electrical Engineering and Computer Science
University of California at Berkeley

Of Devils And Dust

Kris Pister, Professor of Electrical Engineering and Computer Science at the University of California at Berkeley, has imagined several applications for Smart Dust, his baby. Of course, each of us is free to imagine, and if you've got what seems a good idea, write in to Pister—he's listening!

Think of this: you could glue a Smart Dust mote to each of your fingernails. Then, accelerometers will sense the orientation and motion of your fingertips, and talk to your computer. If it knows where your fingers are, you could sculpt 3D shapes in virtual clay, play the piano, and do much more!

Then, there can be defence-related sensor networks that can perform battlefield surveillance, and transportation monitoring. Smart Dust could find its way into quality monitoring: things such as temperature, humidity of meat and dairy products, and so on, could be monitored.

Inventory control applications are interesting: "The carton talks to the box, the box talks to the palette, the palette talks to the truck, and the truck talks to the warehouse, and the truck and the warehouse talk to the Internet. Know where your products are and what shape they're in any time, anywhere."

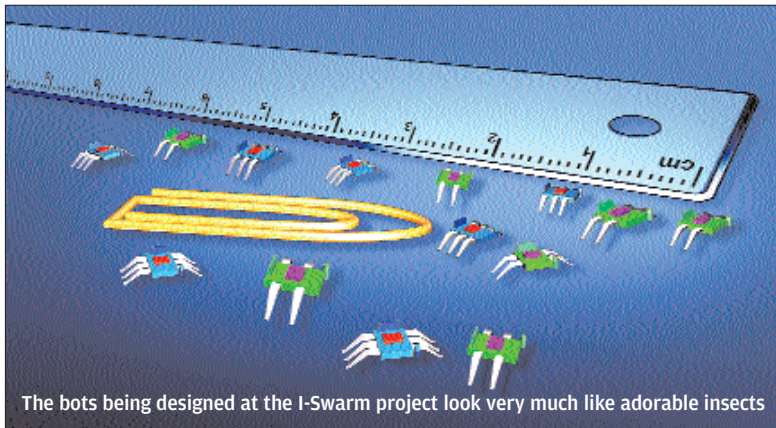
You could put Smart Dust motes on a quadriplegic's face, "to monitor blinking and facial twitches—and send them as commands to a wheelchair / computer / other device." (This was an idea someone sent in.)

Pister also speaks of smart office spaces, where ambient conditions are tailored to the needs of each individual. "Maybe soon we'll all be wearing temperature, humidity, and environmental comfort sensors sewn into our clothes, continuously talking to our workspaces which will deliver conditions tailored to our needs."

Naturally, many others, including us, have tried to imagine what use smart dust, or a swarm of motes, or a roboswarm, or whatever, could be put to. If a swarm were to explore the ocean floor, it could be programmed to look for precious metals or minerals. When one unit finds something that seems precious, it could send out signals that would cause others to gravitate to that spot—but not all of them, because the area under surveillance has to be populated. Then, if a few bots get eaten by a shark, their absence would be felt, and others would come in to fill the gap.

Think of traffic surveillance: if you needed to know the general direction of traffic, or the traffic pattern in a particular area, you could just spray the entire area with a near-invisible swarm of cam-equipped bots! You'd get the entire picture—including, if you wanted such data, where there are more yellow cars and where the humidity correlates with accidents—without the need for complex computer vision algorithms, and with the entire swarm reprogrammable at the press of a button.

Think of medical applications. Nanobots could do things like repairing clogged arteries, and a variety of procedures that involve going where medical equipment can't go directly. Think of dangerous missions like clearing out minefields. Think of operations that involve going where no man has gone before. What seems a better idea—sending in a programmed humanoid and risking



it getting destroyed, or using a spray can to fill the area with smart motes? If some bots died, the others would rush back, warning of something evil going on down there. Need to destroy toxic waste? Let each swarmbot carry a little bit of it, and what you have is a toxic swarm...

The applications of a swarm of tiny, suitably-fitted robots are limited only by the imagination. But what's scary is: suppose that toxic swarm were to veer in the direction of Parliament House?

Goo... D?

We're now back to grey goo, which, as you'll recollect, we started off with. The fear is about swarms getting out of control, clogging the atmosphere, and doing a variety of other bad things. The problem comes when we make the robots self-replicating. (There is good reason to do so, from the cost as well as redundancy points of view.) And once they can self-replicate, what would happen if something went wrong at the control centre? Would they multiply, swim through toxic waste, come into populated areas, and spread death and disease? Would they consume people?

The scare began when molecular nanotech pioneer Eric Drexler first used the term "grey goo" in his 1986 book *Engines of Creation*. In that book:

"Early assembler-based replicators could beat the most advanced modern organisms. 'Plants' with 'leaves' no more efficient than today's solar cells could out-compete real plants, crowding the biosphere with an inedible foliage. Tough, omnivorous 'bacteria' could spread like blowing pollen, replicate swiftly, and reduce the biosphere to dust in a matter of days."

Drexler doesn't now talk in such terms; he has recently made attempts to focus worry regarding nanotechnology in the right directions. But then some people read Michael Crichton's 2002 novel *Prey*, which talks about precisely the same thing—the threat of nanobots going beyond control, replicating like nobody's business, and generally creating a scene. Some of these readers got scared.

Bill Joy, co-founder of Sun Microsystems, once wrote a column in *Wired Magazine* titled *Why The Future Doesn't Need Us*. There, he famously stated that we're fools rushing in—into territory best left unexplored by the GNR technologies (genetics, nanotechnology, robotics). Joy, certainly no Luddite, gauging from his profile, goes so far as to say that there are some *research areas we ought not to pursue* because the consequences might be dire. If a man of Joy's stature is worried, what about the rest of us?

Grey goo seems more of a public scare than a real problem. But there do exist scientists trying to prove that grey goo is impossible, and pseudo-scientists who say the scenario is not entirely implausible.

Space does not permit a plausible-or-not discussion, but it's essentially another doomsday and big-brother scenario. As Pister puts it, "Yes, personal privacy is getting harder and harder to come by. Yes, you can hype Smart Dust as being great for big brother. Yawn. Every technology has a dark-side deal with it."

Yawn, yes. But Google "grey goo" anyway. It's interesting. ■

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How would you boot into Linux using your USB thumb drive?

Send in your solution with the subject "Take a Crack", and your postal address, to takeacrack@thinkdigit.com

THIS MONTH'S CHALLENGE

Get Tux onto your USB drive



LAST MONTH'S CHALLENGE

Win!



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by Abbas K Sutarwala

Published by
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LAST MONTH'S WINNER

Varun Kumar
Village Gijhore
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Bypass Windows File Protection in Windows XP

There are two different solutions, depending on whether you have SP2 installed or not.

If you don't have SP2 installed

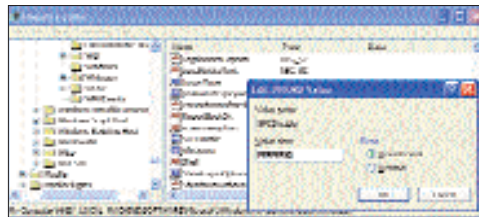
Locate the file `sfc_os.dll`, which should be in your System32 folder. Copy it and name it `sfc_os.bak`. Open this file using a hex editor such as XVI32, which is an excellent freeware. This is an extremely simple edit and does not require an editor with advanced features. All you need to do is change two values.

The location of these values will vary depending on whether you're using Windows XP without a Service Pack or Windows XP with SP1, but the actual hex values to change will be the same.

For Windows XP with no Service Pack installed, go to offset 0000E2B8 (E2B8 hex). For Windows XP with SP1, go to offset 0000E3BB (E3BB hex). At those offsets, change the hex values 8BC6 to 9090.

Note: Depending on your hex editor, you may see the value separated by a space, as in "8B C6".

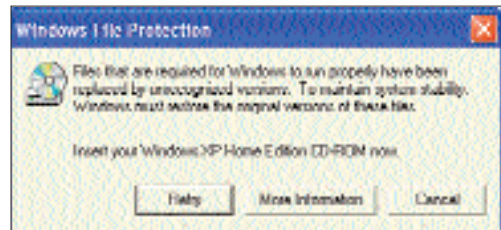
If you can't find the values, do not proceed. It could be that your version of XP is different. The edit as described here only applies to English retail versions of Windows XP.



Set the Registry key to disable SFC

If you have SP2 installed

Disabling System File Protection in XP prior to SP2 involved editing the `sfc_os.dll` file, but the version of `sfc_os.dll` that comes with SP2 is different, and you cannot disable file protection with it. With SP2, you need to use the previous version of the `sfc_os.dll` file, which is 5.1.2600.1106 (the one with SP2 is 5.1.2600.2180).



The Windows File Protection error

Open `sfc_os.dll` with a hex editor and go to offset 0xECE9. The values to change are 33 C0 40. Change these to 90 90 90. Save your changes. Rename the file with a `.bak` extension (`sfc_os.bak`).

The original exists in two locations: the `\Windows\System32` folder, and the `\Windows\System32\dlldata` folder. Place a copy of `sfc_os.bak` in both these folders. Then in the `dlldata` folder, look for `cmd.exe`, double-click it, and enter this command:

```
copy SFC_OS.BAK SFC_OS.DLL /Y
```

Next, go to your System32 folder and do the same thing. Look for `cmd.exe`, double-click it, and enter exactly the same command.

Points to remember

- ❑ If you have a problem overwriting the files, you can do the copying within the Recovery Console, or you can try Safe Mode.
- ❑ The `dlldata` folder is a hidden folder.
- ❑ It is important to copy the file to your `dlldata` folder *first*.
- ❑ If you're prompted to pop in your Windows CD, click Cancel.

Once the files have been copied, shut down your computer and restart it. The final step is to disable System File Protection in the Registry. Go to `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon`. In the right-hand pane, if it doesn't exist, create a new DWORD value named `SFCDisable`. Double-click it and enter "FFFFFF9D". Exit the Registry Editor and reboot. You're done. ■

Navigate to a location using a picture of it? That, and more, is possible with the coolest GPS navigation unit yet

The marriage of GPS units and digicams is a nice innovation that finds use in the Navman iCN 750—a godsend to the absent-minded geek! A 1.3 Megapixel camera allows you to take geo-tagged photos: they hold information about the latitude and longitude of where the photo was shot. And using such a photo, the unit can guide you to that location at a later date!

The brain of the iCN750's is the SIRF Star III chipset, perhaps the most advanced commercial chipset for GPS triangulation right now. With good holding ability under low signal strengths, the chances of losing tracking under dense trees or high-rises are reduced. This smart circuitry is ably supported by a 4 GB hard disk, which can be used to store maps as well as images shot from the camera. The maps can be used to get route guidance to any

location within their range, using the 4-inch high-visibility LCD screen. These maps are 3D, which can be tilted and zoomed to 2D as well.

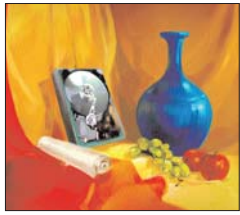
With Navpix, a service offered by Navman, one can even download geo-tagged images from an online album and use them to navigate to where the image was shot. If you take a wrong turn, you are told how to correct your course; there is voice instruction as well.

Too much guidance may spoil the fun of the trip, but then, for a geek, too many features can only be a good thing!



Navman iCN 750

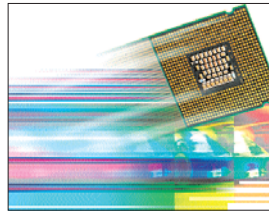




57 Fatter Platters



66 Boxes For Your Bytes



78 Here Comes AMD's Nemesis!

Digital Tools

Technology For Personal And SoHo Productivity

Enhance

One For The Road

Ahmed Shaikh

With powerful operating systems running current phones, you can do more with them. We take a brief tour of what's available for the most popular mobile operating systems—Symbian, Palm OS and Windows Mobile.

Read MS Office Documents On The Go

Documents to Go for Palm, Symbian and Windows Mobile
With wireless e-mail available on your mobile device either via GPRS or via local connectivity to a central computer, you will run across attachments mailed from office or friends. If your work demands it, you might need to read and evaluate attached documents while on the go. The road warrior might need to not only read office documents, but also edit them.

Most Palm OS devices ship with a version of Documents to Go, but the application is also available for Symbian and Windows Mobile. It supports native Word, Excel, PowerPoint, PDF and TXT files, as well as native JPEG and BMP graphics. You can even use files saved to expansion cards or sent as e-mail attachments directly on your device without synchronisation. It is important to note that the program allows for both viewing and editing of this range of files. Moreover, the editing done is never destructive, and is compatible with all major Microsoft Office formats.

While Windows Mobile devices bundle native versions of Word and Excel, the functionality offered by Documents to Go far exceeds that of those versions. The Premium version of the software, as an example, supports password-protected files, charting, pictures, synchronisation of e-mails with attachments, and even spell checking.

You can download evaluation or upgrade versions (if your device already ships with the product) from the DataViz Web site: www.dataviz.com.

For Frequent Flyers

WorldMate 2005 Professional for Palm OS, Symbian, and Windows Mobile

In today's connected workspace, you need the world at your fingertips. WorldMate 2005 Professional offers a comprehensive range of features for exactly that, delivering key data to travelling business people and telecommuters.

The product can keep a wireless tab on its home Web site to offer up-to-date information on items ranging from the weather to currency exchange rates. For those of us who travel frequently, WorldMate has comprehensive and reliable flight schedules for over 800 routes. Daily and weekly schedules are provided for any selected route. A dynamic connection engine provides the 50 fastest connections to your destination. Its five-day weather forecasts cover over 38,000 locations worldwide, and are updated four times a day. WorldMate also has a world clock that features full time-zone coverage and automatic daylight savings time calculations.

Other features include a satellite image covering major landmasses and even offering precip-

Applications for the most popular Mobile operating systems



itation data, an itinerary manager, a tip calculator for restaurants—which lists tax and tip information for over 30 countries and across seven service categories from restaurants to taxis, currency exchange, unit converter, a comprehensive area code directory, packing list, and more. WorldMate comes with an optional desktop client for data syncing and data delivery to your PC as well as mobile devices.

WorldMate 2005 Professional is available for all platforms. Download an evaluation copy from www.mobimate.com.

Keeping In Touch

Agile Messenger for Symbian

VeriChat for PalmOS

MSN Messenger for Windows Mobile

If you own a smartphone or PDA with wireless radio, there are several utilities that allow you to stay in touch with your important contacts over your favourite instant messengers (IMs). Instant messaging over a phone can be a lot cheaper than SMS messages, and is ideal for arranging an impromptu meet over coffee or lunch.

We take a look at VeriChat for the Palm OS and Agile Messenger for the Symbian platform. Users of Windows Mobile platform already have the able MSN Messenger installed.

Agile Messenger allows you to connect simultaneously to Yahoo!, MSN, ICQ, and AOL. It can download your contacts to a Symbian mobile device. Agile can connect to the relevant servers either via your phone's GPRS connection, or by wirelessly connecting to your PC and using its Internet connection via Bluetooth. Note that the software is also available for Windows Mobile and Palm OS, but it is not as developed as the Symbian version. Head to www.agilemobile.com to download Agile Messenger.

VeriChat is a similar tool for the Palm OS platform. It is an always-on, unified IM application for PalmOS devices. On a smartphone, such as the Treo 600, VeriChat works with your persistent GPRS /CDMA 1xRTT wireless data connection to give you an always-on presence on the Yahoo!, ICQ, MSN, and AOL chat networks. It can also send across messages as SMS data. Your buddies always see you as online and can send you messages even when your device is in standby mode, and you can receive and reply to these messages. On a non-phone PDA, such as a Tungsten C with its Wi-Fi connection, you can use VeriChat whenever you have a network connection, or you can use it in always-on mode in conjunction with your mobile phone.

VeriChat offers advanced features such as auto-login/logout, which lets you pick the time of day when you want to be available on the IM networks. You can download a trial version of VeriChat from www.iambic.com. VeriChat is also available for the Symbian and Windows Mobile platforms.

Manage Your Personal Data

Agendus for Palm OS and Symbian

Pocket Informant 2005 for Windows Mobile

Chances are you bought the approximately \$500 device now sitting in your pocket, to do at least some form of personal information management (PIM): to maintain a list of contacts with phone numbers and important dates perhaps?

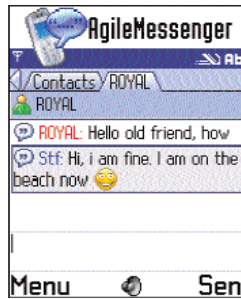


Pocket Informant

Maybe you needed a comprehensive calendar application on the go. Maybe you needed something to keep track and make sense of your mountain of tasks. Whatever the need, a PIM is an essential tool on any mobile handset. And while most devices ship with some form of rudimentary PIM application, you can always find something more comprehensive online. We take a look at one such application meant for Palm OS and Symbian platforms. For Windows Mobile devices, we suggest Pocket Informant.

The personal information manager called Agendus tightly integrates three of the most-used applications on your mobile device: contacts, calendar, and tasks, letting you seamlessly link your business contacts and friends to meetings, events, calls, and tasks. Salespeople will love the way it generates a comprehensive contact history. And, you can choose from seven daily, weekly, and monthly calendar views so you can see your schedule the way you like it. You can even assign icons to events for some fun customisation, so you can tell what upcoming events are with just a glance, in any view. Agendus is available for both the Palm OS and the Symbian platforms. You can download a trial version from www.iambic.com.

While Windows Mobile devices have a healthy application suite for personal information management, we suggest you at least try Pocket Informant. It is a tightly-integrated application that replaces your inbuilt Contacts, Calendar and Tasks applications with simple yet more powerful versions. The program can sync with Outlook and ActiveSync, and any third-party sync solutions. Some of the advanced features of the product allow you to create templates for appointments or tasks, with contact info automatically embedded in the subject, location, or notes. The application also offers smart journaling options and support for VGA resolution and landscape orientation. You can download a trial version of Pocket Informant at www.pocketinformant.com.



Instant Messengers

Lock Your Personal Data

SplashID for Palm OS, Symbian and Windows Mobile

The concept of using your mobile handset as an electronic wallet has been bandied about with much fanfare. Although we still haven't reached the point where we can shop and flash our cell phone to make the credit transfer, these mobile devices can nevertheless carry a lot of personal information. With the threat of wireless snooping, viruses and Trojans ever-present, it becomes vital to protect personal data to the best of our ability.

There's an application for all major mobile platforms that does just that. Called SplashID, the utility safely and securely stores all your personal identification information, including usernames, passwords, credit card numbers, calling cards, bank accounts, and PINs. Information is stored in a secure, encrypted format, and is quickly accessible on the mobile handset or even the desktop computer via the included desktop software.

SplashID offers an unlimited number of customisable record types and categories for storing all kinds of personal information. You can also use it to beam stored records to other devices. The software uses Blowfish encryption to protect your data. It offers field masking, an automatic

password generator, and a backup and restore facility for easy data transport and syncing.

Back Up Your Data

BackupBuddyVFS for Palm OS
Sprite Backup for Symbian
Spb Backup for Windows Mobile

The importance of backing up your data can never be overstressed. Most mobile devices support some form of expandable memory—applications can back up to such a card to the desktop; some even back up your device to a Web server.

BackupBuddyVFS is a backup solution for the Palm OS. With BackupBuddyVFS, you can back up your organiser's critical files to an expansion card. This is a valuable tool when travelling, and in the event of a data loss; you can restore the data immediately without needing to resort to Hotsync. The application also supports incremental backups, encryption of backup files for security, and multiple checkpoints that let you keep varied sets of backups on your expansion cards. BackupBuddy also allows you to schedule a time each day when it will automatically back up your organiser. You can download the software from www.bluenomad.com.

Sprite Backup is a data protection application for mobile phones running the Symbian Series 60 OS. Backup data is encrypted and password-protected. The software also offers an automatic backup management feature. You can pick up a version of Sprite Backup for your Symbian handset from www.spritesoftware.com/symbian.php.

Spb Backup for Windows Mobile creates a backup of your Windows Mobile device. The application creates a self-extracting compressed executables of your device's data, thus making the backup and restore processes simple and intuitive. The application supports backup file compression and backup file encryption, and offers a desktop companion tool.

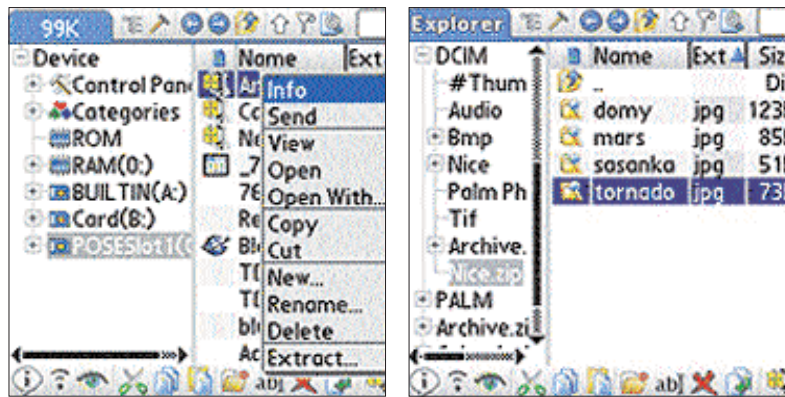
You can download a version of this software for your Pocket PC or smartphone from www.spbsoftware.com.

Taming Your Files

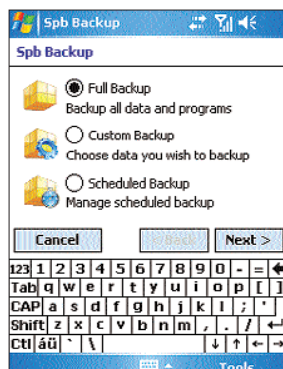
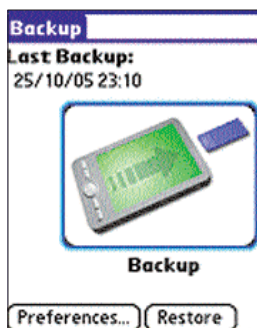
Resco Explorer for PalmOS and Windows Mobile

Modern devices come with modern operating systems—and the associated headache of OS files, registry settings, preferences files. File management on a mobile device is just as important as it is on the desktop. More so with the introduction of wireless radios and the need for data security—beaming files, compressing them, and encryption are all essential aspects of file management.

Resco Explorer for both Palm and Windows Mobile devices implements standard file and folder manipulation, allowing you to copy, move or delete files, create folders, run programs with arguments, and search for files or folders.



Resco Explorer gives you control over OS files, registry settings, preferences, and more



You can also use the Base Cryptographic Provider with RC2 (40-bit) or DES (56-bit) algorithms. The Windows Mobile version also proves a Windows shell extension that can be used for the encryption/decryption process on desktop PCs. The file manager also integrates ZIP Compression which can be used to increase the storage space; moreover, the created archives are PC-compatible—you can extract archives created on a desktop PC and vice-versa. The manager also sports an inbuilt viewer for the TXT, BIN, and HEX formats, as well as the JPEG, GIF, BMP, and PNG graphics formats.

The Palm OS version also allows you to move an application from system RAM to an expansion card; it can also be used as an application launcher, and to back up the contents of your RAM to a card. Download a trial version of this great application from www.resco.net.

JAVA APPLICATIONS

Virtually any device with a processor can run the Java Virtual Machine and thus the applications listed here. Make sure your phone has Java installed before attempting to run these:

flurrymail

www.flurry.com

A signup service that delivers your email to a Java-enabled cell phone for free. More than e-mail, though, the service also pushes RSS feeds over the air. Its e-mail service supports a variety of Web mail—Gmail, Yahoo!, Hotmail, AOL, and all POP3 and IMAP services. Data traffic is compressed and messages are stored on your phone. The application offers a search function and allows you to store multiple mail accounts on one device.

Opera Mini

<http://www.opera.com/products/mobile/operamini/>

A fast and tiny Web browser that allows you to browse the Internet on your phone. With Opera Mini, you can download images, MP3s, and documents directly to your phone. It has all the features expected of a browser and more, such as content download, skinning, bookmarks, and browsing history.

UltraIM Pro Instant Messenger for MSN

<http://www.mobisophy.com/ultraimpro/ultraimpro.htm>

A non-free attempt to mimic MSN Messenger on your cell phone. The appearance and functionality

of UltraIM imitate many features of the MSN client on the desktop, including a sign-in screen, a contacts list, and chat windows. The software allows for direct peer-to-peer transfers of files and photos from your cell phone. If you have a cameraphone, the application allows you to snap a photo and set it as your display pic. It also lets you save your chat history, change your online status, block/unblock contacts, and so on. If you are looking for a less-featured, free software that offers MSN IM functionality, check out QuickIM Express Edition at www.quickim.com.

Remote Desktop for Mobiles

www.desktopmobiles.com

This application allows you to remote control your desktop computer with your cell phone. It works on a client-server model: it installs the client to the phone, and the server on your PC. Once set up, you can execute mouse and keyboard commands using the phone's joystick or buttons. Remote Desktop allows you to send and receive mail, browse the Internet, edit a document in a word processor, and copy, cut, and paste files or folders.

MobyExplorer

www.bermin.net

A file manager and FTP Client with support for military-strength file encryption, an inbuilt text editor, and support for file compression using the GZip protocol. The Text Editor can also be used to edit files or Web pages remotely on an FTP server. The trial version is valid for a period of 15 days.

Free Symbian Applications

FExplorer

www.gosymbian.com

A file manager that allows you to browse your phone's internal memory, its ROM, and your memory card.

AvantGo

www.avantgo.com

A well-known offline browser that allows you to view, offline, specially-made versions of Web sites called channels. You can find preset channels at the Web site.

MobiPocket

www.mobipocket.com

An e-book reader that also allows you to read news and RSS feeds. News can be read offline when you sync your phone with your desktop PC.

Bemused

<http://bemused.sourceforge.net>

Allows you to control your music collection—and your presentations—from your phone using Bluetooth. You can control Winamp, Windows Media Player and PowerPoint.



PuTTY

<http://sourceforge.net/projects/s2putty/>

A free SSH client for the Symbian platform that lets you make secure connections between your mobile device and one or more computers.

Free Palm OS Applications

Converter

www.mattmarsh.net/computing/converter.shtml

A unit conversion tool. You can convert between 215 different elements across 23 categories.

Diddlebug

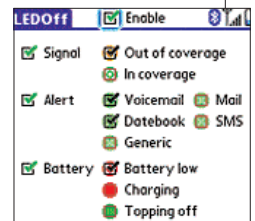
<http://diddlebug.sourceforge.net/>

A note application that allows you to scribble notes on your Palm device using the stylus. It also allows you to set alarms and reminders for each note.

LED Off

<http://mytreo.net/downloads/details-241.html?LEDOff>

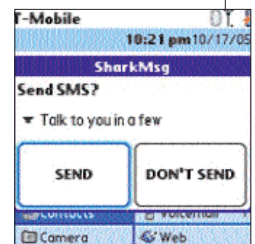
A godsend for the Treo phone, LED Off allows you to control the LED of the unit, switching it off under various usage scenarios.



SharkMSG

<http://software.palminfocenter.com/product.asp?id=1877>

Prompts you to send an SMS to a caller when you ignore an incoming phone call of his or hers. It can be used to decline a call with a friendly text message.



TCPMP

<http://tcpmp.corecodec.org/about>

TCPMP is a great free and open source program handles all sorts of video and music files. The codecs supported are MPEG, DivX, XviD, H.264, MP3, and OGG video and audio formats. Goes great with PocketDivXEncoder (<http://divx.ppc-cool.com/>).

Free Power PC OS Applications

zsIRC

<http://umlaut.intro.hu/~gargaj/zsirc/>

An IRC-client for the Pocket PC. The application is only meant to be run on ARM processors.

ceNetTools

www.mourfield.com/ceNetTools.asp

A PocketPC-based network utility that supports ping, traceroute, and whois.

PocketGBA

www.sunbug.net/products/emul/PocketGBA.html

Emulator software for Nintendo's hand-held game machine—the GameBoy Advance.

Phone Profiles

www.winmobileapps.com/device/pocketpc/plt/plt.aspx

An application to cycle your phone settings through preset profiles. Phone Profile comes with a Today plugin for easy setup.

Redial

www.pocketmax.net/redial.htm

A little tray utility to automatically redial a number if it happens to be busy. Saves you two irritating button clicks! ■

readersletters@jasubhai.com

Fatter Platters

Desktop hard disks are approaching terabyte territory. Does larger equate to better? SATA or IDE? What brand? Need answers? Read on!

Michael Browne

Quick: what's the slowest device in your system? Chances are you'd say "my CPU," or "my DVD-ROM." If we were to enquire as to the most *important* device in your PC, chances are you'd say it's the CPU.

Your hard disk is by far the slowest of all your PC components and yet perhaps the most important device inside your PC. Simple reason: your data resides on your hard drive. It's irreplaceable. Warranties mean nothing: what's worth more—a new, empty hard disk, or all the data you'd hoarded and all the programs you'd installed?

Now, not only are hard disks faster and bigger—*much* bigger—than they were a couple of years ago, prices have fallen so drastically, gigabytes almost cost peanuts. So what do you do with all that storage? Well, with our games going multi-gigabyte and entire movies on our disks, it seems no amount of storage space will ever satiate us.

Remember it's us, the users, and our usage patterns that

dictate terms to hard disk manufacturers, not the other way around. We wanted speed, we needed storage, and craved reliability, didn't we? Well, how does that age-old adage go—"be careful what you ask for"?

Features

We received a lot of Serial ATA drives for this test, all except one of these were SATA 2 compliant. We also received a few Parallel ATA drives. Considering the price difference between them, if your motherboard supports Serial ATA, simply go for it.

The SATA drives from Seagate, Samsung and Western Digital had pins that could be jumpered to force them to operate in SATA 1 mode (150 MBps). This is useful in case your Serial ATA controller is SATA 1; operating without the jumper could cause compatibility issues. The WD drives came with SATA 2 support; no jumpers. The Hitachi series deserves special mention for the hassle involved with enabling SATA 2 mode. They're capable of 300 MBps operation, but come with 150 MBps mode enabled.

Enabling SATA 2



Illustration Pravin Warhokar

was a real pain; it's done by downloading a utility from Hitachi's Web site that needs to be installed on a floppy (which becomes bootable). Alternatively, an ISO image file (in case you don't have a floppy drive handy, like us), can also be used.

The problem was, our downloaded ISO turned out to be corrupt. In fact, it took three downloads and a writer than could burn at incredibly low speeds to get the ISO working. All's well that ends well and the performance difference was worth the effort for us. A relatively new user is likely to have a lot of problems getting this right. Kudos to the other three manufacturers for designing a simple workaround.

Some of the SATA drives from WD and Seagate featured a 16 MB cache, which makes these drives more capable—at least theoretically—at dealing with large file transfers. Among the others only the Hitachi 500 GB SATA had a 16 MB buffer. All others had 8 MB buffers, which we feel is more than sufficient for most usage needs.

Most of the newer SATA drives do not have the older 4-pin power connectors, rather they have the newer SATA connectors. Backward compatibility can be a problem with older SMPS's that don't have these connectors. Adapters are thankfully available in abundance, in case your power supply doesn't provide these.

Seagate has the distinction of having sent in the largest drive in this shootout, their latest

7200.10 series Barracuda, with a capacity of 750 GB. This drive features Perpendicular Recording technology, which allows cramming a previously unheard-of 188 GB on each platter (the drive uses four platters). This drive performed better than all the other drives in many of the tests, but whether this is due to the technology used, or a variety of other factors, it's just too early to tell. Judgment withheld until more drives built around Perpendicular Recording technology emerge, at which time we can do a comparison, pitting a good number of such drives against older drives.

Performance HD Tach 3.0.1.0

We fired up the HD Tach 8 MB file tests first (followed by the 32 MB ones). While the burst rate scores aren't really significant, we noted that three of the Seagate SATA drives topped the burst transfer rate test. This shows that the Seagate drives are making the most of the additional theoretical bandwidth that SATA 2 provides.

Only four drives cracked the magic 60+ MBps in the average read tests: the massive 750 GB Barracuda scored 67 MBps, followed by the 400 and 500 GB WD SATA siblings with scores of 64 and 62.4 respectively. Among the 250 GB drives, the Samsung SP2504C was the topper, with another 60+ score. The scores in both the HD Tach tests (that is, the 8 MB and 32 MB file samples), were nearly identical. A couple of drives from Samsung



Hitachi 500 GB
HDS725050KLAT80

How We Tested

For our internal drive shootout, we used an AM2-based system, powered by a 2.6 GHz 5000+ processor, 2 GB of DDR2 800 MHz memory in dual-channel configuration, and an XFX 7900GTX graphics card. The Hitachi T7K 250 GB SATA 2 HDD was used as our test bench hard disk. The hard disks to be tested were kept clean from any unnecessary software installs, except for the test files. All drivers and necessary software were installed on the test hard drive.

All the hard disks were set as master drives (except the SATA drives, which have individual channels). SATA 2 drives were run at the maximum transfer mode, that is, 3 Gbps, while the SATA 1 drives were run at 1.5 Gbps. Two partitions each of 50 GB were made on each of our test drives, except for the smaller drives, where the primary partition was 30 GB, with the remaining size devoted to the second partition.

We installed Windows XP Professional with Service Pack 2, with all the latest drivers installed.

Our synthetic benchmarks consisted of HD Tach 3.0.1.0 and SiSoft Sandra 2007 Engineer. HD Tach is a very trusted low-level benchmark that needs a completely fresh, that is, unformatted, unpartitioned hard drive to run. The scores it returns are very close to the actual raw speed that a hard drive can attain, simply because it doesn't access the hard disk through Windows and various other software layers, which slow down the drive and adversely affect scores. Because of this uniqueness of HD Tach, we fired it up first.

We ran both 8 MB and 32 MB file sample tests. The Burst Speed figure is a good indicator of what the bus is capable of, but it loses significance as a real-world figure. This is because it represents a "burst" or instantaneous value. The Average Read and Write figures reflect the real-world performance the drive is capable of, as these are the sustainable data transfer rates.

SiSoft Sandra 2007 is another very popular benchmark that tests various facets of a drive's performance. SiSoft Sandra gives a

Drive Index figure—a combined average of the Read and Write tests, which are divided into buffered, random, and sequential read and write tests. Besides these tests, SiSoft Sandra also reports the access time.

For our real-world tests, we used a single 4 GB .rar file to test sequential read and write performance. For random read/write operations we used a combination of more than 25 different file types. The files were also purposely placed in a multitude of folders, and the size of the files was also greatly varied. There was a Word document occupying exactly 25 KB of disk space, while an AVI file was 400 MB in size! The total file size was 4 GB, the same as that of the single .rar file. The variance in size is a good way to test how a drive performs during real-life data transfers, involving lots of small files, as in copying multiple MP3 files from one drive to another.

For our File Write tests, we copied from the test bed drive to the test hard drives. For the File Read tests, we simply copied the test file back to the test bed drive. Our internal file test was the most strenuous test (as the figures show), where we copied the test files from one partition on the test drive to the other partition.

We installed a fresh copy of Adobe Photoshop CS 2 on our test drives. The scratch disk was also kept on the same partition as the install. The test PSD files were also placed on the same partition, a true test of the mettle of today's drives.

Finally, for our game benchmark, we installed a fresh copy of *FarCry* with patch 1.32 installed, on the drive to be tested. The first map was loaded, and the time taken to load was noted. We used Map 1, simply because it starts with a cutscene that isn't very graphics-intensive, as opposed to other levels, which start with gameplay: this causes a slight pause, because it takes the graphics card a little longer to render the scene. We wanted the graphics card to play as small a part as possible, so we noted the time just after the starting of the cutscene cinematic.

scored low here, with the PATA 40 GB being the only sub-50 MBps drive.

The 32 MB tests saw the same four—some taking the top four spots. The Seagate Barracuda 750 GB showed an inexplicable drop in the Average Write part of the 8 MB tests, showing that maybe—just maybe—a drive so large isn't as suitable for writing lots of relatively smaller files.

CPU utilisation isn't a very significant figure today, simply because 4 and 5 percent of CPU resources is a drop of water in a rainstorm for today's multi-gigahertz and dual core processors.

SiSoft Sandra 2007

SiSoft Sandra's latest version gives some nicely detailed scores for individual hard drives. All SiSoft's scores, except the access time, are measured in megabytes per second.

SiSoft Sandra's Drive Index is an average of a drive's scores throughout the gamut of tests it runs, and the highest scorers were once again from the Seagate and Western Digital stables (in that order)—namely the 750 GB 7200.10 Seagate and the WD4000KS. In the 250 GB and below category we saw the Samsung SP2504C lead yet again.

Besides the drive index, SiSoft Sandra also gives figures for Read and Write operations. These are divided into sequential and random figures. Sequential figures measure the drive's ability to read and write data sequentially, that is, to adjacent areas of the disk. This test largely emulates the performance one can expect from a drive while working with large files. Sequential operations are usually done much quicker, and the scores will reflect this.

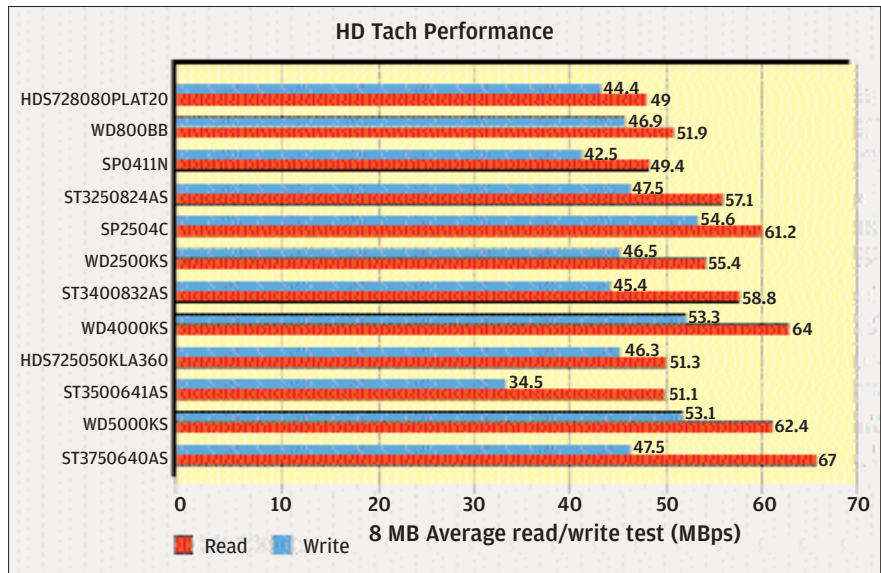
The Random Read and Write scores indicate how well a drive scores when working with scattered data, such as small or discontinuous files. In these tests the 2 heavyweights from Western Digital (the WD4000KS and the WD5000KS), along with the 750 GB Barracuda posted some of the highest read scores we've come across. In the smaller drive group, the Samsung SP2504C once again came out on top.

Among the PATA drives, yet another Samsung drive (for the wrong reasons this time), the 40 GB SP0411N came in last, with the WD1200BB joining it in the under-50 scores for the Drive Index. This is understandable, since the Parallel ATA interface isn't (these days) exactly known for speed. The 500 GB and 250 GB Hitachi drives did quite well.

Real-World Tests

We were more interested in the scores the hard drives would put up in the real-world tests, because these represent actual performance through data transfers both through the bus and through the internal drive buffer.

The file read and file write tests check the I/O performance of a hard drive, as well as its ability to properly utilise the bandwidth that the bus (whether SATA or PATA) provides. A drive that performs better at reading data (whether sequen-



Hitachi 250 GB
HDT722525DLAT80



Samsung 250 GB
SP2504C

tial or random) is more suitable for storing data files such as MP3s and AVIs, that is, non-installable files. This is because these types of files are written only once, but may be read several times. You listen to your music daily, but don't necessarily keep copying it to different locations on your drive partitions, do you?

A drive that excels at writing operations (to find drives suitable for each type of operation, check our benchmarks in the table) is more suitable to use for installing Windows and other program files. This is because the OS and programs are constantly performing write operations in their respective folders. Such drives are also very suitable for creating swap files (which are some of the most write-intensive areas of your entire disk).

The Internal File Transfer involves an intra-drive transfer, where we copy our test files from one partition to another within the same drive. Very suitable to test the performance of a hard drive under stress, simply because data is being read and written simultaneously on the same drive, without the interface between drives playing any significant part. The performance of a hard disk is the sum total of its drive mechanics (including the spindle speed and platter areal density) and I/O buffer. The drive is actually stressed as it has to perform a read and write operation simultaneously, not to mention that the buffer is also being doubly stressed.

The Assorted Internal Read Test was completely dominated by two drives, the Seagate 7200.10 750 GB behemoth, and the slightly smaller (and slower by a hairsbreadth) WD5000KS 500 GB. The only other drive that came anywhere close (read that as a distant third) was the Samsung SP2504C. But this drive was in the smaller capacity group. In all honesty, we were quite disappointed with the Hitachi Deskstar drives, particularly the 7K and T7K series, although no slowcoaches they be; a tad more performance we were hoping to see (if you'll pardon the horrible rhyme!). Among the PATA drives, the WD800BB from Western Digital stood out: it churned out some truly stellar scores, definitely on par with

Scoreboard						
Parallel ATA Hard Drives						
BRAND	Samsung	Western Digital	Hitachi Deskstar	Western Digital	Western Digital	Hitachi Deskstar
MODEL	SPO411N	WD800BB	HDS728080PLAT20	WD1200BB	WD1600BB	HDT722525DLAT80
Features (Out of 15)	4.99	5.48	4.38	5.97	6.46	6.43
HDD Capacity (Formatted in GB)	37.27	74.53	76.69	111.79	149.05	232.88
Interface	Parallel ATA	Parallel ATA	Parallel ATA	Parallel ATA	Parallel ATA	Parallel ATA
Rated Capacity (GB)	40	80	80	120	160	250
Rotational Speed (RPM)	7200	7200	7200	7200	7200	7200
Buffer Size (MB)	2	2	8	2	2	8
Jumper If Required (bundled)	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
Bundled Cables/Screws	✓/✓	✓/✓	✓/✗	✓/✓	✓/✓	✓/✗
Performance (Out of 70)	37.76	40.71	41.10	39.30	39.36	46.04
Synthetic Tests						
HD Tach 3.0.1.0						
8 MB Sample File						
Average Read (MBps)	49.4	51.9	49	47.6	51.2	56.2
Average Write (MBps)	42.5	46.9	44.4	46.6	50.2	49.7
CPU Utilisation (%)	1	1	2	1	1	2
Random Access Time (ms)	14.1	13.5	13.4	13	18.1	12.6
Read Burst Speed (MBps)	68.7	95.7	122.9	93.8	93.7	128.7
32 MB sample file						
Average Read (MBps)	48.3	51.9	49	52.7	57.2	56.1
Average Write (MBps)	48.3	50.5	47.7	51	55.1	54.1
CPU Utilisation (%)	2	1	1	2	1	2
Random Access Time (ms)	14.2	13.5	13	13	18	12.5
Read Burst Speed (MBps)	68.9	96	114.9	93.8	93.7	128.6
SiSoft Sandra 2007 Engineers Edition						
Drive Index (MBps)	46	50	50	49	53	58
Sequential Read (MBps)	54	56	58	58	63	67
Random Read (MBps)	34	39	41	38	40	46
Sequential Write (MBps)	54	56	58	58	63	66
Random Write (MBps)	36	39	32	29	30	36
Access Time (ms)	11	8	7	9	9	7
Real World Tests In Seconds (lower is better)						
File Write Test 4 GB Assorted Files	145.6	75.8	143.2	142.3	140.4	114.3
File Read Test 4 GB Assorted Files	117	75	119.5	125.3	117.7	111.2
Internal File Read Test 4 GB Assorted Files	294.5	300.6	422.3	345.4	362	208.7
File Write Test 4 GB Single File	78.5	142.1	76	74.1	69.3	70.6
File Read Test 4 GB Single File	78	74.4	74.5	72.3	69.1	70.4
Internal File Read Test 4 GB Single File	263.5	317	309.3	361.5	364.6	192.3
Photoshop CS2 Startup Time	12.2	10.5	11.4	10.6	10.4	8.7
Photoshop CS2 Image Load (550 MB file)	27.3	24.8	26.2	25.9	24.7	22
Photoshop CS2 Image Load (1 GB file)	85.2	77.1	66.5	80.98	76.8	64.2
Farcry (level 1) load time	26	30.6	18.2	21.9	30	23.2
Warranty (Years)	5	3	5	3	3	5
Price Per MB (Paise)	5.24	3.34	3.82	3.06	2.75	2.39
Price Index (Out of 15)	13.50	10.59	9.00	7.71	6.43	4.74
Price (Rs)	2,000	2,550	3,000	3,500	4,200	5,700
Total Score (Out of 100)	56.25	56.77	54.48	52.98	52.25	57.21



+ Decent performance with larger files, slim design
- Limited storage



+ Decent performance for its price
- Limited storage



+ Performed well in single file-copy tests
- Cheaper options available in 80 GB segment



+ Good when working with large files
- 2 MB buffer



+ Low CPU utilisation, speedy performer
- Lack of 8 MB buffer



+ Fastest of the PATA drives, good for graphic applications
- Costly

Serial ATA Hard Drives (Up to 250 GB)

Hitachi Deskstar	Samsung HD040GJ	Samsung HD080HJ	Western Digital WD800BD	Samsung HD 120IJ	Western Digital WD1200JS	Samsung HD160JJ	Western Digital WD1600JS
10.61	4.99	5.48	5.48	5.97	5.97	6.46	6.46
465.76	37.27	74.53	74.53	111.79	111.79	149.05	149.05
Parallel ATA	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2
500	40	80	80	120	120	160	160
7200	7200	7200	7200	7200	7200	7200	7200
8	8	8	2	8	8	8	8
✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
45.41	44.73	44.02	39.81	44.37	43.13	44.02	45.53
51.3	53.8	50.6	51.9	51	52.5	50.2	55.2
46.4	48.2	46.1	46.9	45.8	45	45.6	47.4
0	4	3	2	4	4	3	0
12.9	15	14	13.5	14.2	13.2	14	13.2
129.9	206.7	209.1	178.5	183.8	170.4	206.6	206.7
51.3	54.1	50.8	52.1	51.2	52.6	50.2	55.3
49.9	52.7	49.6	50.7	49.8	50.7	49	53.3
3	4	3	4	4	1	4	1
12.7	15.3	14.1	13.5	14.4	13.1	14.3	13.2
129.9	199.9	202.3	178.4	178.7	170.1	201.3	207.3
54	53	51	51	52	51	51	52
62	61	58	58	59	58	58	61
45	42	40	41	41	40	40	39
62	62	59	58	61	58	58	61
36	42	40	40	41	39	40	41
6	8	8	8	8	8	8	9
116.3	102.4	112.3	123	101.2	105.6	114.2	105.7
111.8	116.5	120	173.4	120	114.5	116.6	115.8
206.5	194.4	195.6	329.8	195.9	216.5	192.6	196.4
70	73.2	75.6	75.6	71.6	74.6	74.3	71.3
69.4	71.2	75.6	73.5	71.6	71.9	73.8	70.2
194.5	198.7	189.6	300	201.2	201.1	176.4	179.9
10.4	9.5	9.6	10.5	10.2	9.6	10.1	9.2
24	25	26.2	25	25.3	24.1	25.1	22.5
69.2	83.4	63	75	63	74	84	71.2
23.1	24	24.2	30	23.7	29.5	23.7	29
5	5	5	3	5	3	5	3
4.19	5.37	3.21	3.93	2.80	3.49	2.19	2.88
1.35	13.17	11.02	9.00	8.44	6.75	8.06	6.14
20,000	2,050	2,450	3,000	3,200	4,000	3,350	4,400
57.37	62.89	60.52	54.28	58.78	55.85	58.54	58.12



- + The largest PATA drive available
- Very expensive



- + Steady performer, Large buffer
- Low storage space



- + Very good value for money
- 40 GB sibling performs better



- + Scored well in synthetic test
- Costly for an 80 GB drive



- + Excellent pricing, good performance
- None in particular



- + Steady performer, low CPU utilisation
- Too costly for a 120 GB drive



- + High performance in intra-drive transfer tests, excellent pricing
- None



- + Extremely low CPU utilisation
- Expensive



Scoreboard

Serial ATA Hard Drives (Up to 250 GB)

BRAND	Hitachi Deskstar	Hitachi Deskstar	Samsung	Seagate	Western Digital
MODEL	HDT722516DLA380	HDT722525DLA380	SP2504C	ST3250824AS	WD2500JS
Features (Out of 15)	3.14	4.18	7.56	7.56	7.56
HDD Capacity (Formatted in GB)	153.38	232.88	232.88	232.88	232.88
Interface	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2
Rated Capacity (GB)	160	250	250	250	250
Rotational Speed (RPM)	7200	7200	7200	7200	7200
Buffer Size (MB)	8	8	8	8	8
Jumper If Required (bundled)	✘/✘	✘/✘	✓/✓	✓/✓	✓/✓
Bundled Cables/Screws	✓/✘	✓/✘	✓/✓	✓/✓	✓/✓
Performance (Out of 70)	45.09	47.09	49.58	49.87	45.34
Synthetic Tests					
HD Tach 3.0.1.0					
8 MB Sample File					
Average Read (MBps)	54.3	54	61.2	57.1	55.5
Average Write (MBps)	48.7	49.6	54.6	47.5	47.8
CPU Utilisation (%)	4	4	4	4	3
Random Access Time (ms)	12.7	12.9	13.8	13	13.2
Read Burst Speed (MBps)	207.8	199.7	208.5	242.2	169.2
32 MB sample file					
Average Read (MBps)	54.5	54.2	61.4	57.2	55.6
Average Write (MBps)	52.9	53.4	59.1	52.6	53.5
CPU Utilisation (%)	3	5	4	5	3
Random Access Time (ms)	12.7	12.7	13.8	13.1	13.2
Read Burst Speed (MBps)	207.8	202.8	203.6	234.1	169.6
SiSoft Sandra 2007 Engineers Edition					
Drive Index (MBps)	53	56	59	57	54
Sequential Read (MBps)	63	64	68	65	62
Random Read (MBps)	40	45	46	44	43
Sequential Write (MBps)	62	63	68	65	62
Random Write (MBps)	38	43	46	44	43
Access Time (ms)	9	7	7	7	7
Real World Tests in seconds (lower is better)					
File Write Test 4 GB Assorted Files	111.2	111.3	104.4	115.2	103
File Read Test 4 GB Assorted Files	112.3	93	111.7	76	114.4
Internal File Read Test 4 GB Assorted Files	212.4	205.7	157.8	173.4	196.5
File Write Test 4 GB Single File	69.1	67	68.8	69.7	71.6
File Read Test 4 GB Single File	70.9	65.9	73.4	98.6	70.5
Internal File Read Test 4 GB Single File	202.3	192.2	151.2	148.1	179.1
Photoshop CS2 Startup Time	9	8.8	8.3	7.3	9.1
Photoshop CS2 Image Load (550 MB file)	23.7	20.4	21.1	19.1	22.2
Photoshop CS2 Image Load (1 GB file)	61	68.9	61	63.2	69.5
Farcry (level 1) load time	23.8	23.9	23.3	19.3	28.2
Warranty (Years)	5	5	5	5	3
Price Per MB (Paise)	3.25	2.26	1.76	1.91	2.14
Price Index (Out of 15)	5.29	5.00	6.43	5.93	5.30
Price (Rs)	5,100	5,400	4,200	4,550	5,095
Total Score (Out of 100)	53.52	56.27	63.56	63.36	58.20



+ Reasonable performance
- Costlyest of the 160 GB drives



+ Fast access time for single large files
- High CPU utilisation



+ Superb all round performance, excellent pricing
- None



+ Excellent for working with multiple files, good overall performance
- None



+ None
- Mediocre performance

Serial ATA Hard Drives (Above 250 GB)

Western Digital	Seagate	Western Digital	Hitachi Deskstar	Seagate	Western Digital	Seagate
WD2500KS	ST3400832AS	WD4000KS	HDS725050KLA360	ST3500641AS	WD5000KS	ST3750640AS
7.56	9.39	9.39	8.36	10.61	10.61	13.67
232.88	372.61	372.61	465.76	465.76	465.76	698.63
Serial ATA 2	Serial ATA 1	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2	Serial ATA 2
250	400	400	500	500	500	750
7200	7200	7200	7200	7200	7200	7200
16	8	16	16	16	16	16
✓/✓	✓/✓	✓/✓	*/*	✓/✓	✓/✓	✓/✓
✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
46.63	47.88	50.68	48.10	46.13	47.26	53.17
55.4	58.8	64	51.3	51.1	62.4	67
46.5	45.4	53.3	46.3	34.5	53.1	47.5
2	3	4	3	4	4	4
13.2	13.8	13.1	12.9	14.2	13.5	13.8
171.4	132.5	189.8	209.2	233.4	189.1	242.2
55.6	59.5	64.1	51.2	51.2	62.2	67
53.4	55.4	61.1	49.8	43.6	59.4	60.5
2	4	5	3	3	3	5
13.2	13.7	13.1	12.7	13.9	13.5	13.7
172.8	132.5	190.3	209.3	232.1	188.7	241.2
55	58	62	55	51	57	66
62	66	71	62	59	70	76
43	46	49	44	41	33	51
62	66	76	62	55	70	75
45	42	70	47	38	47	49
7	6	6	6	8	16	7
96.5	100.3	104	100.5	110.2	105.3	93.1
111.8	114.7	111.8	109.8	115.2	112.3	111.4
179.4	203.2	162.5	174.1	187.2	145.6	145.4
69.6	69.1	70.5	69.8	78.4	69.7	74
74.2	70.6	70.7	70.4	71.2	70	70.3
162.7	199.6	170.4	157.6	164.2	171.2	124.2
9.7	8.8	8.5	9	9.1	8.4	8.1
22.2	22.8	19.7	23.5	25	19.7	15.3
67.3	62.4	59.6	55	70.3	59	62.1
26.2	17.4	27.4	23.6	17.3	28.5	24.3
3	5	3	5	5	3	5
2.18	3.01	2.86	4.53	3.27	3.04	3.28
5.19	2.35	2.47	1.25	1.73	1.86	1.15
5,200	11,500	10,920	21,600	15,600	14,500	23,500
59.37	59.62	62.54	57.72	58.48	59.74	67.99



+ Very low CPU utilisation, good performance in assorted file write test
- None



+ Good performer in game load test
- Slightly expensive



+ Blazing performance in SiSoft bench mark
- None



+ Fair performance
- Extremely costly for a 500 GB Drive



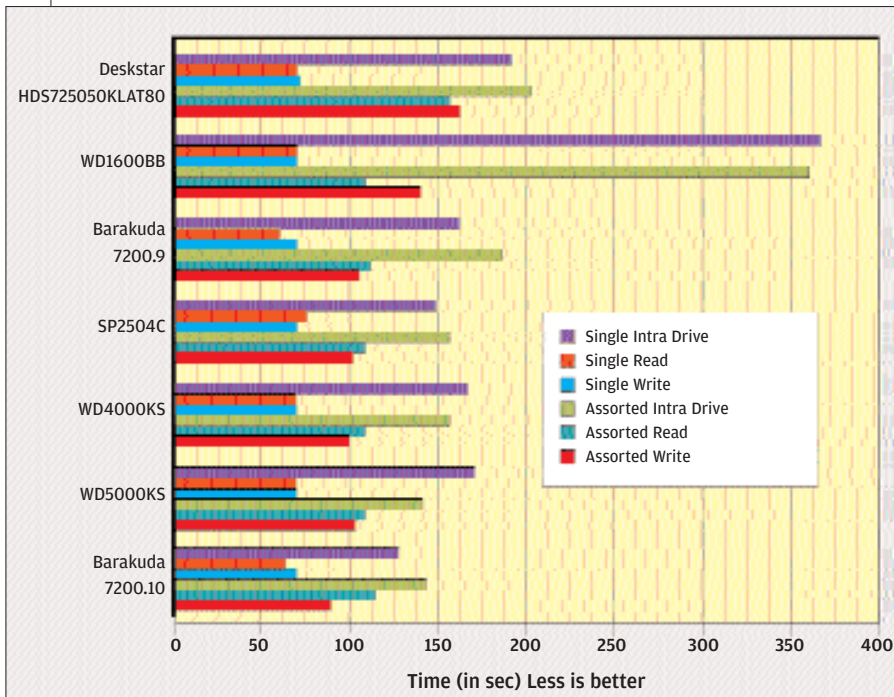
+ Fastest in game load test
- Highly priced



+ High performance through all the tests, reasonably priced for 500 GB
- None



+ Enormous storage, blazingly fast
- Expensive



WD4000KS and WD5000KS. All these three broke the sub 1 minute barrier.

The slowest drive in this test was once again a PATA drive, Samsung's SP0411N, and was, surprisingly, joined by a SATA sibling (the HD160JJ).

Throughout our tests, we also noted which drives ran hotter than the others, as is regular practice. We do not note these scores unless we come across something highly irregular or unusual. It's interesting to note that the blazing-fast Seagate drives also ran the hottest throughout the tests, with the SATA drives in particular generating quite a bit of heat. Temperatures remained well within check however—not a serious problem—but it does add to the heat circulating inside your cabinet, especially when you have multiple drives. The WD drives seemed the coolest in general, with the Samsung and Hitachi drives falling in between.

Purchase Decisions

Getting yourself a new hard disk can be a daunting task, especially with all the options out there, both brand-wise and size-wise. As mentioned earlier, Serial ATA is an established technology now, with very tangible

benefits over Parallel ATA. Though SATA drives are slightly more expensive than their PATA counterparts, the extra cash spent is well worth the performance gains. SATA cables are also much sleeker; PATA cables are notorious airflow restrictors and dust magnets.

Instead of going the traditional "more cash, bigger drive" way, we've tried to distinguish between users on the basis of what they actually need, and not what they can afford. After all, it's your requirements and not your wallet that defines you as a user! We've given you a convenient little box full of goodies (in the form of buying decisions) to make that choice just a little easier!

the much faster SATA drives. If you do not have Serial ATA support on your motherboard, this is the hard disk for you!

The single 4 GB .rar file test was once again owned inside-out by the 750 GB heavyweight from Seagate, followed, albeit by a large margin, by its 250 GB sibling. The other drive that was quite impressive here was the 500 GB Hitachi SATA, with a time of 157.6 seconds in the Internal singlefile transfer test. The WD 120 and 160 GB PATA models brought up the rear in this test. If you look closely at the table, you'll see the fastest drive is nearly three times faster than the slowest drive. While we cannot in all fairness compare the latest SATA drive with much older PATA models, this proves that hard drives on the whole are becoming faster with every new release. Each revision adds performance and subtracts from the price (well, most of the time, anyway).

Next, we ran the gamut of file and application loading benchmarks. Two drives from Seagate really shone while loading Photoshop—the quickest was the Seagate Barracuda 7200.9 series 250 GB (7.3 seconds), followed by the 750 GB (8.1 seconds). The Samsung SP2504C was also very good here, scoring within a second of the leaders.

The mammoth 1 GB Photoshop .PSD file test was interesting because it saw a new leader emerge, a hard drive that had earlier escaped the limelight. The 500 GB Hitachi SATA (the Deskstar HDS725050KLA360) simply blew away all but two drives, the Western Digital siblings, the



Seagate 250 GB ST3250824AS



Western Digital 400 GB WD4000 KS

And The Winners Are...

Serial ATA (250 GB And Below)

In this, the category comprising the smaller SATA drives (250 GB and smaller), we were most impressed by the performance of the 250 GB Samsung SP2504C. It's also very competitively priced at Rs 4,200, and we deem it worthy of the *Digit Best Buy Gold* award. The *Digit Best Buy Silver* award goes to the Seagate ST3250824AS, another 250 GB drive. This drive lost out on the Gold because it's just a little more expensive, and also because it trailed the SP2504C in many of the tests by just a bit.

Serial ATA (Above 250 GB)

The drive that most impressed throughout all our tests was the Seagate Barracuda 7200.10 750 GB. However, it actually belongs in a class of its

Contact Sheet		Inkjet MFD		
Brand	Company	Phone	E-Mail	Website
Hitachi	Cyberstar Infocom Ltd	9341057327	lalit.sudrik@cyberstarindia.com	www.hgst.com
Samsung	Samsung India Electronics P. Ltd	011-41511234	jayakumar.v@samsung.com	www.samsunghdd.com
Seagate	eSys Distribution Pvt Ltd	011-4181-1694	msinghal@esysmail.com	www.seagate.com
Western Digital	Venkon Digital Systems P. Ltd	022-23874427	sales@mediamangroup.com	www.westerndigital.com

RAID

RAID, or Redundant Array of Independent Disks, is, quite simply, a setup that utilises more than one hard disk to either share or replicate data over hard disks. There are several different ways of implementing RAID and the type of RAID adopted dictates the relative merits and demerits. Motherboards today come with integrated SATA RAID controllers, and feature multiple versions of RAID.

We used one of our fastest drives, the 750 GB Seagate Barracuda, and for the RAID array, we used two Seagate Barracuda 7200.8 series 400 GB drives to show you the performance differences. Although RAID has many avatars, most home users need to know about only three of them.

RAID 0

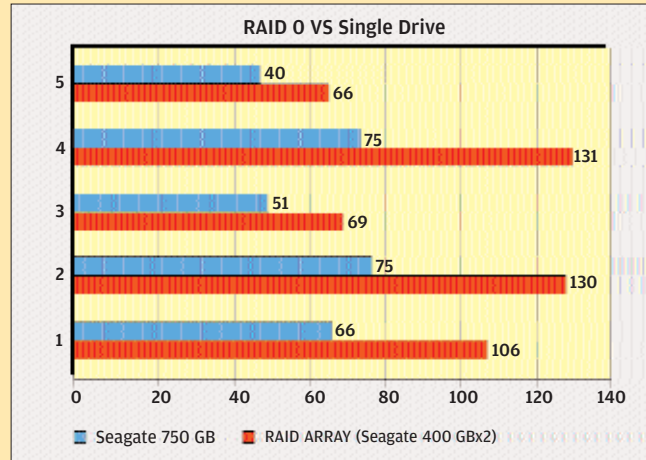
Also called Striping, this setup is for the speed fanatic. Striping doesn't have any sort of fault tolerance—a failure in any one of the striped drives will cause data loss. That said, drives of today are much less prone to crashes than their predecessors, and for pure speed, RAID 0 rules! Gamers and hardcore enthusiasts swear by their RAID 0 arrays.

RAID 0 needs at least two drives: data is broken down into blocks, and each block of data is written alternately to a separate hard drive. The load is, therefore, spread across a number of channels and drives. Another advantage of RAID 0 is that no parity calculation is involved, since there is no duplicating of data anywhere—so CPU overhead is minimised. RAID 0 is highly recommended for gamers, 2D and 3D professionals, and anyone who wants greater read/write performance from his storage subsystem.

RAID 1

Also called "Mirroring," RAID 1 offers data security via fault tolerance. It needs a minimum of two drives to implement: during a write operation in RAID 1, the same data is written to each of the drives simultaneously, so each drive contains a mirror of the data on the other drives. A read operation can be performed from any of these drives, so if one crashes, data can be accessed from the other.

The only disadvantage is that I/O performance is slower than with a single drive, and the parity computations—and therefore the CPU overheads—are much higher than with a single drive or even with striping. RAID 1 is very useful for users for whom data integrity means everything.



RAID 0+1

A combination of striping and mirroring, this features two or more clusters of RAID 0 arrays collectively configured as a mirrored array. RAID 0+1 requires a minimum of four hard drives to implement. Since this mode contains multiple striped segments, the I/O performance is blistering, while the presence of mirroring adds the much-needed parity to the mix. RAID 0+1 isn't without its demerits: it's very costly to implement, and besides, the failure of a single drive will in essence create a single, glorified RAID 0 array, and thereby defeat the purpose of parity completely.

Although implementing RAID seems like a costly affair, there are many users who may have a number of hard disks installed in their PCs, or even a couple of older hard disks lying around. With the advancements in today's onboard RAID controllers, it's no longer necessary to have drives of the same capacity, although "RAIDing" unequal-sized drives means you will lose the extra space the larger drive offers. Those with two or more similar-sized hard disks available are perfect candidates for experimenting with RAIDing. Remember, though: make a backup of all your essential data, as setting up a RAID array will destroy any data present on all the disks being used.

own for two reasons—first, it's much larger than the other drives, and second, it uses the Perpendicular Recording technology. So we are not giving it the winners title, even though the scores indicate otherwise.

Western Digital gets all the accolades in this category: the WD4000KS (400 GB) receives the *Digit Best Buy Gold*, and the WD5000KS (500 GB), the *Digit Best Buy Silver*.

Parallel ATA

In case it's got to be PATA for you, look no further than the Hitachi siblings, the Deskstar HDT722525DLAT80 and the Deskstar HDS725050KLAT80 (250 GB and 500 GB respectively). Bear in mind that the 500 GB Hitachi—our *Gold* award winner—maybe the best of the PATA drives, performance-wise, it is expensive at Rs 20,000. Go for it only if you simply must have the largest and fastest PATA drive out there. For just as much bang without a steep drop in your

bank balance, go with our *Silver* winner—the smaller Hitachi 250 GB, which, at Rs 5,700, offers you the best of both worlds.

Our Conclusion

We tested 26 hard drives this time round. Seven of these were the older PATA drives. With the majority of drives going SATA, it's the end of the road for PATA. All motherboards sold these days sport SATA interfaces, and with the possibility of CD/DVD drives going SATA, this seems fitting.

Much like how SATA debuted some years ago, Perpendicular Recording makes its way into the drive market, with the promise of larger density drives, equating to greater storage that you won't pay a premium for.

With Serial ATA promising as much as 600 MBps in the near future, the storage horizons seem promising indeed. As there is much good that has come before us, let there be more of the same! ■

michael_browne@thinkdigit.com



Western Digital 500 GB WD5000KS

Boxes For Your Bytes

Opening up a PC is not child's play for everyone. External hard drives give you the convenience and ease of moving data—just plug 'n' play!

Jayesh Limaye

Hard drives were initially manufactured exclusively for research and development institutes and mainframes. Now they are, of course, mass-produced for our computers, and today, hard drives come under the consumer electronics segment. According to CNET, hard drive shipments for consumer electronics worldwide will grow by about 35 per cent this year—a huge increase from last year. The overall hard drive market is projected to increase by 18 per cent by the end of this year.

A few months ago, we reviewed DVD-Writers, which are the most popular data backup devices. But DVDs are limited in terms of capacity, so backing up a large hard disk using these is extremely difficult. Now, you could, of course, use another hard disk to back up your data, but then, what if you don't have free bays in your cabinet? What if you need to synchronise data between home and office?

Enter portable hard drives. These devices today have capacities on par with those of their internal counterparts. External hard drives allow you to exchange games, movies, music and other stuff with friends. Besides, not everyone is comfortable with opening up the PC cabinet and connecting an internal hard drive to swap data. An external drive spells convenience.

As hard drives celebrate their 50th birthday, we bring you a shootout of external hard drives available in the Indian market. We received a total of 18 external drives from Freecom, Iomega, LaCie, Qrisma, Seagate, Transcend and Western Digital. We divided these into three categories: portable hard drives, desktop replacement / backup drives, and microdrive-based hard drives.

The first segment—*Portable hard drives*—comprises the drives with a capacity of 120 GB or less. Drives with more features, and larger than 120 GB, comprised the second segment—*Desktop replacement / backup drives*. And three very compact drives—something like larger versions



of USB sticks—fell in the third category, *Micro-drive-based hard drives*.

What's to be tested in an external hard drive? After all, they're just boxes for your data, right? Well, they can be differentiated according to their targeted consumer segment. There are large differences, such as their interface, whether there are dedicated buttons to back up data, how sleek they are, the software they come bundled with, as well as their speeds and prices—amongst other variables.

So we tested them, and here's what we found.

PORTABLE HARD DRIVES

The drives in this category target the consumer who does not need to use the drive on a regular basis, such as a home user who only needs to back up data occasionally. Such a user might also find an external disk useful when he wishes to swap music and movies with friends and doesn't want to open—or doesn't feel like opening—his cabinet. Naturally, these drives do not include high-end features such as FireWire ports.

A bulk of the drives we received—10 drives out of the 18—come under this segment. Of these, two were from Freecom, one from Iomega, three from LaCie, one from Seagate, two from Transcend, and one from Western Digital (WD).

Features Capacities And RPM

Capacities range from a modest 30 GB to a good 120 GB. The LaCie Skwarim is 30 GB, which is internally a Hitachi HTC42603 Travelstar C4K60 drive. There were two 120 GB hard drives—the LaCie Rugged RUG U2 and the WD Passport.

The rotational speeds, or rpm, of the drives is 4200 rpm for Freecom FHD-XS, Freecom FHD-2 PRO, LaCie Skwarim 30 GB and Transcend StoreJet 40 GB; 5400 rpm for the Iomega 80 GB, LaCie Rugged RUG U2, LaCie Design by F. A. Porsche 40 GB, Seagate 40 GB, Transcend StoreJet 80 GB, and the Western Digital Passport 120 GB. The higher the rpm, the higher the data read and write speeds, at least theoretically.

Interfaces

The interface is USB 2.0 with all these drives. All computers these days come with motherboards with USB 2.0 ports, which support a peak data throughput of 480 Mbps—fast enough to back up your data: for example, theoretically, a 700 MB DivX movie can be transferred in around 12 seconds, though in reality the figures are different. These drives are backwards-compatible with USB 1.1, which means you can use them with older computers. Of course, data transfer will be much slower.

Bundled Software

All the drives came bundled with some kind of backup or data synchronisation software. The Freecom drives came with the Personal Media Suite, which synchronises your data at the press of a button on the drive. Acronis True Image—a good and fast data backup and drive

imaging software, which has simple Wizards that first-time users will find easy to use—also came bundled with these drives. The LaCie drives came with 1-Click, another good backup software. The WD Passport box was marked “WD Sync software included”, but there was no CD inside; we later found that the software was on the drive. If you purchase the WD Passport, back up the software before you start using the drive—it is a file synchronisation software.

The Iomega came with FolderShare, a synchronisation software that allows you to synchronise your data over the Internet! You'd want to use this feature to, say, synchronise data on a daily basis between your office and home computers.

The StoreJet suite software bundled with the Transcend drives consists of several utilities. The StoreJet PC Lock software can be used to securely lock your OS: it gets locked when the drive is unplugged, and you unlock your OS when you plug the drive back in. Security HDD is an Explorer-like file manager that stores files on these drives by compressing and encrypting them. Mobile Internet Explorer, Mobile Outlook Express and Mobile Address Book let you get online from any computer using your customisations such as bookmarks, e-mail accounts, etc., and all these can be stored on the drives. The applications—Mobile Internet Explorer and so on—appear on the Device Desktop panel, which is something like a toolbar. This lets you carry your Desktop anywhere.

Cables And Accessories

All the drives came with regular USB cables, except those that had retractable ones—the Freecom FHD-XS and the LaCie Skwarim. The retractable cables sit inside the drive case, and can be pulled out when the drive needs to be connected. The above two drives' extension cables are required because the length of the retractable cable is not more than an inch, and it can be difficult to connect them to a PC.

The Freecom FHD-2 PRO, LaCie Rugged RUG U2, LaCie Design by F. A. Porsche 40 GB, and the Transcend StoreJet 2.5 80 GB come with a separate power cable that connects to an additional USB port: normally, these USB drives draw power from the USB data cable, that is, a single port. But in some systems, the power that the port can supply is limited, and the power required to run the hard drive may be insufficient. A separate power connection is therefore required. The Seagate 40 GB drive had a cable with two USB



Freecom
FHD-XS



connectors to connect to two USB ports. This is done to remedy the same power problem mentioned, but in this case, there is a single cable that carries power as well as data.

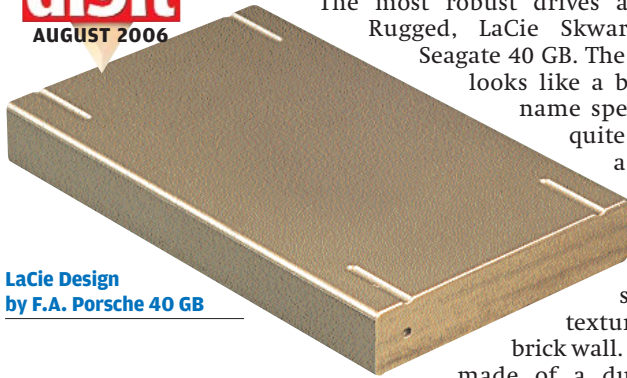
The Transcend drives and the LaCie 40 GB each came with carry pouch.



Other Features

The most robust drives are the LaCie Rugged, LaCie Skwarim and the Seagate 40 GB. The LaCie Rugged looks like a brick, and the name spells it out: it's quite rugged! It has a rubber shock-absorbing jacket. LaCie Skwarim is a perfect square, and its texture looks like a brick wall. The exterior is made of a durable, shock-absorbent material. We had a hard time overcoming the urge to see if these drives could survive a "drop test"!

The Seagate has a hard casing with a unique design that looks like a wire mesh on the sides.



LaCie Design by F.A. Porsche 40 GB

The aluminium casings of the Freecom are also quite sturdy, with a smooth finish. The WD Passport matched up to the Freecom's, though it had a plastic casing.

The Transcend and Iomega drives, too, have aluminium cases, but these aren't as firm as those of the others. They can be easily dented—not a good thing, since these drives are meant to be carried around.

To be truly portable, a drive should, of course, be small and very light. The Freecom FHD-XS is the sleekest drive in this category, while the lightest is the LaCie Skwarim, weighing just 99 grams. The LaCie Rugged is the drive with the largest dimensions, but isn't the heaviest—that dubious honour goes to the Seagate 40 GB drive, at 292 grams. Of course, even at 292 grams, you can't consider this drive *heavy*!

The drives from LaCie are not only rugged, they are also elegantly designed. The LaCie Skwarim was designed by world-renowned product and interior designer Karim Rashid; it is pink, it's smooth to the touch, and it looks like it was designed specially for women.

The LaCie Design by F. A. Porsche hard drive was designed by the well-known design agency Porsche Design GmbH. These are drives you can actually show off!

How We Tested

Test Machine Configuration

Our test machine consisted of an Intel Pentium 4 processor running at 3.6 GHz on an Intel 925XCV motherboard with 1 GB of Micron DDR2 533 MHz RAM and a Seagate Barracuda 120 GB SATA hard 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.

Test Procedure

The performance tests consisted of synthetic tests using benchmarking software and real-world tests where application performance and file transfer speeds were tested.

The synthetic tests were conducted using HD Tach RW 3.0.1.0 and SiSoft Sandra 2007 Home, which are popular benchmarking software for storage devices. Their results can be compared with benchmarks conducted anywhere with similar versions of these software.

Features

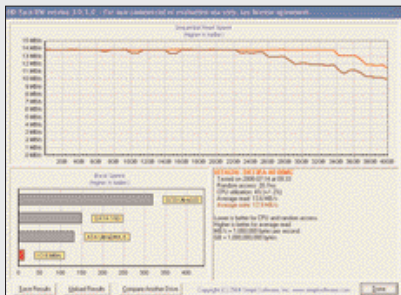
For features, we noted various aspects of the drives such as the capacity, dimensions, weight, bundled software, interface type, cables and accessories, and ruggedness.

Performance

Synthetic Test—HD Tach RW 3.0.1.0

The fresh hard drive to be tested was connected to the test machine and was not formatted; it was allowed to remain raw. HD Tach RW 3.0.1.0 was then run and used to evaluate the hard drive.

The scores we noted were as follows:



1. CPU Utilisation

This benchmark determines the CPU load of the storage device. Lower CPU utilisation is better. High CPU utilisation (above 15 per cent) generally indicates that a poor controller is being used, that DMA needs to be enabled, or that a driver update is required.

2. Random Access Time benchmark

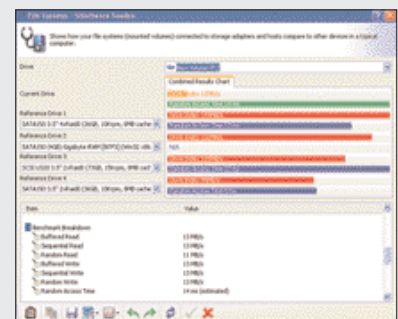
This benchmark determines the random access speed of the device. Random access is the average time it takes to retrieve data from a randomly-located sector on the device. Lower random access speeds mean better application and database performance. Random access times can also give an insight into the efficiency of the interface a device is attached to.

3. Sequential Read and 4. Sequential Write

The maximum sustained speed (lowest speed on the device) is an important metric for real-time sequential access applications. The maximum speed may be important to a power user who would like to partition the drive into a high-speed partition and a low-speed partition. These were noted and logged.

Synthetic Test - SiSoft Sandra 2007 Engineer

A 20 GB FAT32 partition was created where possible, with the compression turned off, on the test hard drive. A second partition was created utilising the remaining capacity. SiSoft Sandra 2007 Engineer was launched and the File System benchmark module was run. The 20 GB partition we created was benchmarked using this module. The Sequential Read, Random



Performance: Synthetic Tests HD Tach RW

A drive consuming higher CPU resources is not a good thing, since it tends to slow down the computer. A CPU utilisation of above 15 per cent generally indicates something seriously wrong. However, if the figure hovers around 3 to 5 per cent, it shouldn't really make a difference with today's CPUs. This is especially true for external hard disks—the disk isn't connected to the computer all the time, and one doesn't usually do other tasks while transferring data to or from the drive.

In the HD Tach RW test, the CPU utilisation scores of the Freecom FHD-XS, the LaCie Skwarim, and the LaCie Rugged were all low—3 to 4 per cent. The Seagate 40 GB, however, went up to 9 per cent.

A lower random access time means better all-round performance. The Seagate 40 GB drive had the lowest random access time of 17.5 ms, closely followed by the Transcend StoreJet 80 GB with 17.8 and the LaCie Rugged with 17.9 ms.

In the average read and write speed tests, the LaCie Rugged, which posted the highest average read score of 30.3 MBps, was also the one to score the lowest in the average write test

with just 3.9 MBps. The WD Passport scored the highest in the read test with 25.5 MBps; closely following it were the Freecom FHD-2 PRO and LaCie Design by F. A. Porsche, each with 25.3 MBps.

SiSoft Sandra 2007 Engineer

After testing the raw hard drives, we formatted them with the NTFS file system to evaluate their file system performance. (SiSoft Sandra benchmarks drives after they are formatted using a file system.)

The LaCie Design by F. A. Porsche and the WD Passport were tied for the top spot with a drive index of 27. Next-best was the Freecom FHD-2 PRO with 25. These drives performed extremely well in all the tests under this benchmark. The LaCie Rugged behaved strangely in this test as well: while it posted average scores in the read tests, it performed below our expectations in the write tests.

The access times of most of the drives ranged between 10 and 15 ms. The exception was the Seagate 40 GB drive, which scored 19 ms. Of course, a lower access time is desirable for faster file access.

Performance: Real-World Tests

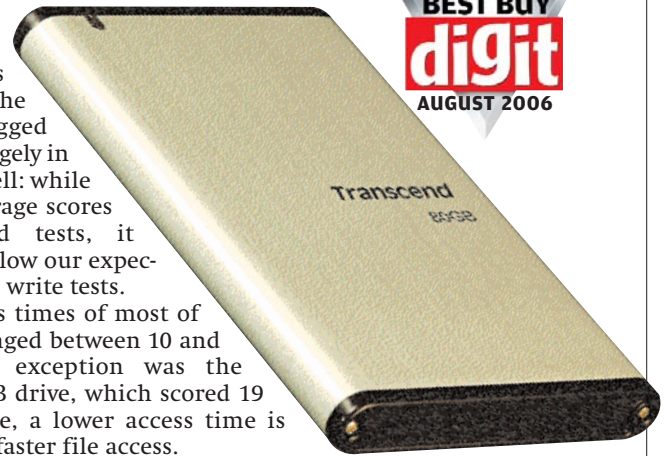
Most of the data we usually deal with comprises assorted files. While transferring 1 GB of assorted files from our primary drive to the external drive (this is the real-world write performance test for the drive), the Transcend StoreJet 80 GB logged the best time: 55 seconds. The LaCie Rugged came in last at 110 seconds—much slower than any of the drives in this category.

The picture was different when the assorted files were transferred from the external drive to our primary hard drive (this is the real-world read performance). This time, the WD performed well, requiring just 43 seconds for the job, while the LaCie Design by F. A. Porsche was next with 44 seconds. The Freecom FHD-XS was the slowest here with 83 seconds.

When we wrote a 1 GB sequential file to the drives, the LaCie Design by F. A. Porsche was the winner, clocking just 40 seconds. Yet again, the LaCie Rugged was the slowest in the real-world write performance, taking 173 seconds.

In the test where we read a 1 GB sequential file from the external drive to our primary drive, the LaCie Rugged and the LaCie Design F. A. Porsche were the fastest, each taking 33 seconds. The slowest drive was again the Freecom FHD-XS at 94 seconds.

When you need to transfer large archives, movies, CD or DVD images and so forth, you are transferring sequential data. The above test should give you an idea of which drive is better suited for such operations.



Transcend
StoreJet 2.5 80 GB

Read, Sequential Write, Random Write and Access Time scores were reported at the end of this benchmark, which we noted.

Real World Test: File Copy

The real-world tests consisted of copying a 1 GB file (for sequential data transfer speed) and 1 GB of assorted files (for random data transfer speed) from one partition of the hard drive to the other. The time taken for this data transfer was noted. The sequential file transfer time will give a fair idea about how the hard drive will perform when large files such as movies are transferred. The assorted files consisted of multiple file types that included applications, Word documents, Excel files, MP3s, small video clips, etc., thus simulating a real-world situation.

The tests we carried out were:

- ☐ Time taken to copy the file(s) to the external drive, thus giving a measure of the drive's interface performance as well as the write performance.
- ☐ Time taken to copy the file(s) from the external drive, thus giving a measure of the drive's interface performance as well as the read performance.
- ☐ Time taken to copy the file(s) within the external drive, thus giving a measure of how well-tuned the drive's internal mechanics are, well as the overall performance.

Real World Test - Multitasking

In this test, we copied 1 GB of assorted data from the external hard drive and to it simultaneously. This tests the drive's multitasking capability and also gives a measure of its interface performance.

Scoreboard


Portable External Hard Drives

BRAND	Freecom	Freecom	Imega	LaCie	LaCie	LaCie
MODEL	FHD-XS	FHD-2 PRO	Portable Hard Drive	Rugged RUG U2	Skwarim 30 GB	Design by F.A.Porsche
Features (Out of 40)	24.67	25.08	22.30	23.14	23.99	23.55
Capacity (GB)	40	100	80	120	30	40
Rotational Speed (rpm)	4200	4200	5400	5400	4200	5400
Average Rotational Latency (ms)	7.1	7.1	5.5	5.5	7.1	5.6
Buffer Size (MB)	2	8	8	8	2	2
Interface (USB/FireWire)	✓/✗	✓/✗	✓/✗	✓/✗	✓/✗	✓/✗
Bundled Software	Freecom Personal Media Suite, Acronis True Image	Freecom Personal Media Suite, Acronis True Image	FolderShare	LaCie "1-Click" Backup Software, MacDrive Test Drive	LaCie "1-Click" Backup Software, MacDrive Test Drive	LaCie "1-Click" Backup Software, MacDrive Test Drive
Carry Pouch	✗	✗	✗	✗	✗	✓
Dimensions (W x D x H) (mm)	85 x 85 x 12	127 x 79 x 15	128 x 74 x 12	145 x 90 x 25	85 x 85 x 13	129 x 76 x 17
Weight (kg)	0.11	0.18	0.16	0.25	0.10	0.18
Cables and Accessories Provided	USB extension cable	USB power cable, USB data cable	USB data cable	USB power cable, USB data cable	USB extension cable	USB power cable, USB data cable
Miscellaneous	Backup button, Retractable USB connector	Backup button	USB On/Off switch, power connector	Power connector	Retractable USB connector	Power connector
Ruggedness (So5)	4.25	4.25	3.75	4.5	4.5	4
Performance (Out of 40) *	14.22	27.58	26.19	17.25	20.77	26.26
Synthetic Tests						
HD Tach RW						
CPU Utilisation (%)	3	8	7	4	4	6
Random Access (ms)	20.7	18.9	18.9	17.9	20.8	20.9
Average Read (MB/s)	13.6	24.7	23.6	30.3	19.5	27.1
Average Write (MB/s)	12.9	25.3	22.1	3.9	19.5	25.3
SiSoft Sandra 2007 Engineer						
Drive Index (MB/s)	13	25	24	14	20	27
Sequential Read (MB/s)	13	28	27	17	22	31
Random Read (MB/s)	11	21	20	14	17	23
Sequential Write (MB/s)	13	26	25	6.7	22	26
Random Write (MB/s)	13	19	19	9	17	22
Access Time (ms)	14	11	12	12	13	11
Real-World Tests						
File Transfer Assorted 1 GB File To Drive (seconds)	93	65	59	110	61	56
File Transfer Assorted 1 GB File From Drive (seconds)	83	48	47	56	50	44
File Transfer Assorted 1 GB File Within Drive (seconds)	390	89	97	182	302	148
File Transfer 1 GB Single File To Drive (seconds)	86	48	48	173	49	40
File Transfer 1 GB Single File From Drive (seconds)	94	38	49	33	46	33
File Transfer 1 GB Single File Within Drive (seconds)	340	83	98	186	179	186
Multitasking Test						
Simultaneous 1 GB Assorted Files To and Fro (seconds)	365	98	102	184	303	165
Warranty (Years)	1	1	1	1	1	1
Price Per MB (Rs)	0.40	0.17	0.12	0.14	0.37	0.13
Price Index (Out of 20)	5.76	5.43	9.55	5.51	8.41	18.10
Price (Rs)	16,500	17,500	9,950	17,250	11,300	5,250
Final Score (Out of 100)	44.64	58.09	58.04	45.90	53.17	67.91

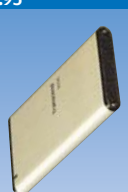
 <p>+ Good bundled software, rugged build quality - Slow performance, expensive</p>	 <p>+ Good performance, software, rugged build - Very expensive</p>	 <p>+ Good performance, sleek - Average build quality</p>	 <p>+ Rugged build quality - Very expensive</p>	 <p>+ Good build quality and overall performance - Expensive</p>	 <p>+ Inexpensive, good performance - None in particular</p>
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* Higher is better for scores in MBps, while lower is better for scores in milliseconds and seconds.


Seagate Portable Hard Drive	Transcend StoreJet 40 GB	Transcend StoreJet 2.5 80 GB	Western Digital Passport 120 GB
18.10	23.08	24.21	21.33
40	40	80	120
5400	4200	5400	5400
5.6	7.14	4.2	5.5
2	2	2	2
✓/✗	✓/✗	✓/✗	✓/✗
SeaTools Online, drivers and manuals	Storejet Software Utility, drivers for Windows 98SE, user manual	Storejet Software Utility, drivers for Windows 98SE, user manual	WD Sync on the hard drive
✗	✓	✓	✗
127 x 94 x 25	95 x 72 x 15	129 x 80 x 13	142 x 88 x 19
0.29	0.13	0.14	0.28
USB cable with two port connectors	USB data cable	USB power cable, USB data cable	USB data cable, power connector
✗	✗	✗	✗
4.5	3.75	3.5	4.25
23.21	18.87	24.13	28.18
9	5	6	5
17.5	18.5	17.8	18.5
25.6	16.9	24.5	28.7
23.8	16.6	24.8	25.5
24	18	21	27
29	20	22	32
19	15	18	22
22	18	26	26
20	14	21	21
19	14	10	15
69	74	55	57
51	61	50	43
168	186	148	112
46	65	42	44
39	55	48	36
196	185	154	101
177	195	152	116
1	2	2	1
0.14	0.23	0.10	0.09
16.16	10.00	11.88	8.64
5,880	9,500	8,000	11,000
57.46	51.95	60.22	58.15



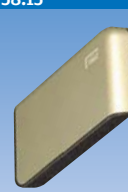
+ Inexpensive, rugged build quality
- Not a good software bundle



+ Good bundled software
- Average build quality



+ Good performance and bundled software
- Average build quality



+ Very good performance
- Somewhat expensive

We then transferred files within the drives: this tests the capability of the drives' cache and its overall read and write speed. In the assorted file transfer, the Freecom FHD-2 PRO performed very well, taking just 89 seconds to copy the files within the drive. Its little brother, the FHD-XS, was the slowest at 390 seconds. The picture was no different in the sequential file copy test: the Freecom FHD-2 PRO again scored the highest at just 83 seconds, while the FHD-XS was again the slowest at 340 seconds.

The last real-world test we conducted was the multi-tasking test: here, we transferred 1 GB of assorted files to and from the external drives at the same time. This puts a strain on the interface and every other aspect of the drive. This time, yet again, the Freecom FHD-2 PRO was the fastest at 98 seconds, but was very closely followed by the Iomega at 102 seconds. The slowest drive was the Freecom FHD-XS—for the third time in a row—with a timing of 365 seconds.

Our Conclusion

As always, we factored in price along with the features and performance scores to decide on the winner.

The WD Passport has the lowest cost per MB at 9 paise, while the Freecom FHD-XS, which is priced very high (Rs 16,500) has the highest cost per MB of 40 paise. This high cost is, however, understandable because of the expensive bundled Acronis True Image software, as well as the build quality and finish.

We concluded that the LaCie Design by F. A. Porsche 40 GB should receive the Digit Best Buy Gold award, because of its astoundingly low price of Rs 5,250, as well as good build quality and sound performance.

The Transcend StoreJet 2.5 80 GB is priced at Rs 8,000—nice for an 80 GB external hard drive. We adjudged this one the winner of the Digit Best Buy Silver because of its above-average performance and its uniquely versatile software suite.

DESKTOP REPLACEMENT / BACKUP DRIVES

The specialty of the external hard drives comprising this segment is that they are meant to be used for frequent and large backups. Thus the drives under this category are larger than 120 GB, which is necessary for the scenarios they will be employed in.

These are priced considerably higher than those in the preceding category, and are accompanied by good data backup software. Most also have the FireWire interface, and some are even physically designed so they can be stacked one over the other when there's a need to augment data storage capacity.

A typical user of this kind of external hard drive is a system administrator who needs to frequently back up and restore data, while also moving data between computers not connected via a network.

We received five products in this category, which was dominated by the three drives sent in by Seagate—the Seagate Pushbutton Backup drives of 160, 200 and 400 GB. The others were

the Freecom FHD-3 (400 GB) and the LaCie Design by F. A. Porsche 250 GB.



Features Capacities And RPM

We've mentioned the capacities of these drives above. All the drives in this category were 7200 rpm drives. All had a good 8 MB buffer, so data transfer is smooth.

Interfaces

The LaCie 250 GB drive features only USB 2.0. All the other drives feature the USB 2.0 as well as the FireWire interfaces. They come with two FireWire ports, a feature that lets you connect more drives in a daisy-chain, and that does not require the computer to have more FireWire ports to add compatible devices. This can be used to either connect other FireWire devices such as DV cams, or to augment the drive space by connecting more such drives.

Bundled Software

A backup button is present on all the drives except for the LaCie, whose software does not support such a feature. The Freecom FHD-3 comes bundled with the Freecom Personal Media Suite, which lets you back up or synchronise your data with the FHD-3 at the press of the button on the drive. Acronis True Image, a very good data backup and restore software, is also bundled with this drive.

The LaCie Design by F. A. Porsche 250 GB comes with the 1-Click data backup software as well as MacDrive, a software that allows you to connect and use Macintosh-formatted media directly on a PC. So if you connect this drive to a Windows PC, you can use the software to use the Mac-formatted drive with Windows without the need to reformat it to a Windows-compatible file system such as NTFS.

The Seagate drives are all bundled with the same data backup software—Bounceback Express, which in conjunction with the push-button on the drive, easily and conveniently backs up data.

Cables And Accessories

All the drives come with the requisite data cables and power adapters. Freecom bundles three power cables with different types of plugs for compatibility with different power plug-point types.

The LaCie comes with two power cables with plugs of different types. Except for the Freecom, all the drives have a power On/Off button, which lets you turn the drive on or off from the drive unit itself.

Other Features

The Freecom FHD-3 is the best-looking drive in this segment with its smooth finish and metallic lustre. It also has the best build quality, edging past the others. Next are the three Seagate drives, which are identical in looks and design. Last is the LaCie with its boxy design. Though it's called "Design by F. A. Porsche", we didn't find anything noteworthy about the design.

The Freecom and the Seagate drives have a design that facilitates stacking similarly-



Seagate Pushbutton Backup 160 GB

All About USB And FireWire

USB is now ubiquitous—it is perhaps the first true plug 'n' play medium that PCs have. As much as it is widely used today, it was not taken seriously when it was first introduced in 1995—that was USB 1.0.

It was when the iMac was introduced in 1998, with only USB ports, that USB became popular. At about the same time, USB 1.1 came into the picture on Intel-based PCs along with support in Windows 98 (the first Windows version to natively support USB). It could work at two speeds—1.5 Mbps for devices such as mice and joysticks, and 12 Mbps (called high-speed) for devices such as disk drives. USB 2.0, which was introduced in 2000, supports a maximum of 480 Mbps. Nearly all USB devices and motherboards today support the USB 2.0 specification.

Some older motherboards, however, supported only legacy USB devices (keyboards and mice). You cannot plug your Webcam or external hard disk into these USB ports! In such a case, an inexpensive USB hub can be installed in a PCI slot.

Apple introduced the FireWire port in 1995. The FireWire interface is officially called IEEE 1394. FireWire connectivity is found more commonly on digital video cameras than USB is, though the speeds are comparable—FireWire supports a maximum of 400 Mbps. However, a recent improvement to the FireWire interface called FireWire II (officially IEEE 1394b) boosts the speed to 800 Mbps.

All PCs less than three years old have at least two USB 2.0 ports. However, a USB 2.0 device will work on a USB 1.1 port; it will just be slower. Unfortunately for FireWire, not many motherboards have been supporting it. It is only now that it is becoming a standard port.

A significant advantage FireWire has over USB is in the amount of power it can deliver—1.25 A at 12V gives 15 W, while USB's 500 mA at 5V gives 2.5 W. This means peripherals have more power at their disposal with FireWire.

Both the FireWire and USB interfaces support the use of a hub—meaning that with just one physical connection to the motherboard, many more devices can be connected, so long as the total current drawn does not exceed the amount supplied.

FireWire is used by devices such as external hard drives, external DVD-Writers, DV camcorders, high-end digital audio equipment, digital still cameras, printers, scanners, as well as home entertainment equipment such as personal video recorders, game consoles, home stereo equipment, DVD players, and digital TVs.

One of the reasons for the overwhelming popularity of USB is that motherboard manufacturers provide USB 2.0 ports on every motherboard these days. FireWire ports are not so commonly seen on motherboards.

designed drives one on top of the other. As we noted earlier, this is useful when you connect several such drives in a daisy-chain.

Size-wise, the LaCie Design by F. A. Porsche has the smallest dimensions, followed by the Freecom. The Seagate drives are larger. The LaCie is also the lightest, weighing just 900 grams; the Seagate Pushbutton Backup 200 and 400 GB drives are heavier at 1.176 kg.

The Freecom drive as well as all the Seagates come with sturdy plastic stands to keep them in an upright position so as to save on desktop space.

Performance: Synthetic Tests

HD Tach RW

The CPU utilisation of the Seagate Pushbutton Backup 200 and 400 GB drives was the lowest at 7 per cent—just marginally less than the 8 per cent of the Freecom and LaCie and the 9 per cent of the Seagate Pushbutton Backup 160 GB drive. A figure of 8 or 9 per cent is perfectly fine. The case was similar with random access speeds, where the drives performed almost on par.

In the Average Read and Average Write tests, the Freecom FHD-3 and the LaCie scored high—with almost equal scores.

SiSoft Sandra 2007 Engineer

As was the case in HD Tach, the Freecom and the LaCie were the top scorers, with the Freecom scoring 30 and the LaCie scoring 29 MBps as the drive index. The other drives topped out at 25 MBps.

In the Random Read speed test, the LaCie scored 25 MBps, falling short of the 28 MBps scored by the Freecom FHD-3. The access time of the Freecom was the lowest at 6 ms, while at 22 ms, the Seagate Pushbutton Backup 160 GB was the slowest.

Performance: Real-World Tests

In the 1 GB assorted data transfer to the external drive, which tests the write performance, the Freecom was the slowest; there wasn't much variance in the scores of the others. Greater variance was seen when data was read from the drive. Here the LaCie and the Freecom completed the job in 43 seconds, whereas the older Seagate 160 GB took 55 seconds for the same job.

In the sequential 1 GB data transfer test, too, there wasn't a large degree of variation between the drives, with the fastest and the slowest drives differing by a maximum of 7 seconds.

Copying files between partitions on the same drive pushes the drive mechanics to the limits. In the assorted files copy, the LaCie, at 88 seconds, was the fastest, while the Seagate 160 GB was the slowest at 113 seconds. In the sequential file transfer, the Seagate 200 and



Seagate Pushbutton Backup 200 GB

400 GB performed better than the others, taking 87 and 88 seconds respectively. The Seagate 160 GB took much longer: 108 seconds.

Finally, we transferred the assorted files simultaneously from and to the drive. Once again, the Seagate 200 and 400 GB drives performed well, taking 101 seconds. The Seagate 160 GB and the Freecom FHD-3 were slower, taking 118 and 114 seconds respectively. From this, we can see that while synchronising or backing up data, the Seagate 200 and 400 GB drives will definitely do a better job.

Our Conclusion

Once again, the cost factor was considered at the end to decide the winners. We found that the cost per MB of three of the drives was 4 paise; the Freecom FHD-3, which costs Rs 28,000, is very expensive at 7 paise per MB. The high cost can be attributed to the expensive Acronis True Image software, which is an excellent data backup software; it can be a lifesaver if your system crashes.

The Seagate Pushbutton Backup 160 GB has the same good features as the other Seagate drives such as the dual FireWire ports, a good data backup software, and a button to automate the backup process—along with average, but not bad, performance. Priced at a rock-bottom Rs 6,500, this drive wins the Digit



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Scoreboard Desktop Replacement External Hard Drives						
BRAND	Freecom	LaCie	Seagate	Seagate	Seagate	LaCie
MODEL	FHD-3	Design by F.A. Porsche	Pushbutton Backup	Pushbutton Backup	Pushbutton Backup	Carte Orange
Features	32.94 (Out of 40)	25.44 (Out of 40)	29.37 (Out of 40)	29.04 (Out of 40)	31.77 (Out of 40)	19.95 (Out of 45)
Capacity (GB)	400	250	200	160	400	6
Rotational Speed (rpm)	7200	7200	7200	7200	7200	3600
Average Rotational Latency (ms)	4.17	4.16	4.16	4.16	4.16	NA
Buffer Size (MB)	8 MB	8 MB	8 MB	8 MB	8 MB	2
Interface (USB/FireWire)	✓/✓	✓/*	✓/✓	✓/✓	✓/✓	✓/*
Bundled Software	Freecom Personal Media Suite, Acronis True Image	LaCie "1-Click" Backup Software, MacDrive Test Drive	Bounceback Express, DiscWizard, Windows 98 drivers	Bounceback Express, DiscWizard, Windows 98 drivers	Bounceback Express, DiscWizard, Windows 98 drivers	*
Dimensions (W x D x H) (mm)	175 x 140 x 44	188 x 112 x 35	180 x 165 x 57	180 x 165 x 57	180 x 165 x 57	85 x 55 x 6
Weight (kg)	0.95	0.9	1.176	1.05	1.176	0.06
Cables and Accessories Provided	USB data, FireWire, power adapter, power cable with three types of plugs	USB data, power adapter, two power cables with different types of plugs	USB data, FireWire, Power Adapter, Power cable	USB data, FireWire, Power adapter, power cable	USB data, FireWire, Power Adapter, Power cable	USB extension cable
Miscellaneous	Backup button, two FireWire and a USB port, plastic stand	Power On/Off button, USB port	Backup button, power On/Off button, two FireWire and a USB port, plastic stand	Backup button, power On/Off button, two FireWire and a USB port, plastic stand	Backup button, Power On/Off button, two Firewire and a USB port, Plastic stand	Retractable USB cable
Ruggedness (So5)	4.5	4	4.25	4.25	4.25	4
Performance (Out of 40)	30.93	31.37	29.01	26.28	28.82	28.81
Synthetic Tests						
HD Tach RW						
CPU Utilisation (%)	8	8	7	9	7	2
Random Access (ms)	13	15.7	15.5	15.1	15.9	32.9
Average Read (MB/s)	34.7	34.9	29.1	24.2	29.1	6.5
Average Write (MB/s)	27.4	27.5	25	25.8	25.7	6.6
SiSoft Sandra 2007 Engineer						
Drive Index (MB/s)	30	29	25	24	25	7.3
Sequential Read (MB/s)	33	33	28	28	28	7.8
Random Read (MB/s)	28	25	22	17	21	6.6
Sequential Write (MB/s)	26	26	25	25	25	7.8
Random Write (MB/s)	26	26	21	21	23	4.6
Access Time (ms)	6	11	9	22	12	22
Real-World Tests						
File Transfer Assorted 1 GB File To Drive (seconds)	59	52	54	53	54	287
File Transfer Assorted 1 GB File From Drive (seconds)	43	43	49	55	50	135
File Transfer Assorted 1 GB File Within Drive (seconds)	100	88	96	113	92	539
File Transfer 1 GB Single File To Drive (seconds)	42	44	43	47	45	187
File Transfer 1 GB Single File From Drive (seconds)	34	33	39	38	41	169
File Transfer 1 GB Single File Within Drive (seconds)	94	74	87	108	88	512
Multitasking Test						
Simultaneous 1 GB Assorted File Transfer To and Fro (seconds)	114	107	101	118	101	973
Warranty (Years)	1	1	1	1	1	1
Price Per MB (Rs)	0.07	0.04	0.04	0.04	0.04	1.40
Price Index	3.93 (Out of 20)	11.46 (Out of 20)	13.10 (Out of 20)	16.92 (Out of 20)	7.33 (Out of 20)	6.98 (Out of 15)
Price (Rs)	28,000	9,600	8,400	6,500	15,000	8,600
Final Score (Out of 100)	67.80	68.27	71.48	72.24	67.92	55.73
						
	+ Good performance, rugged build - Very expensive	+ Very good performance and price - No FireWire interface	+ Good performance, software, and build - None in particular	+ Inexpensive; good software - A little slow	+ Good performance, software, and build - Expensive	+ Sleek credit card-like design - Expensive

Higher is better for scores in MB/s, while lower is better for scores in milliseconds and seconds.
DNC: Did not complete test.

Microdrive-Based External Hard Drives

Qrisma	Seagate
1" Portable Micro Drive	5.0 GB Pocket Hard Drive
16.24 (Out of 45)	17.56 (Out of 45)
6	5
NA	3600
NA	NA
NA	2
✓/✗	✓/✗
✗	Seagate Toolkit, drivers for Windows 98, user manual
46 x 64 x 12	70 (diameter) x 18
0.03	0.063
✗	✗
Retractable USB cable	Retractable USB cable
3	3.25
21.24	30.30
1	3
51.4	26.1
7.4	6.8
3.3	6.8
5.84	8
6.24	8
5.28	7
6.24	8
3.68	5
26.4	24
DNC	299
DNC	138
DNC	508
DNC	169
DNC	128
DNC	603
3024	696
1	1
1.55	0.94
6.32 (Out of 15)	12.50 (Out of 15)
9,500	4,800
43.80	60.36



- + Very small form factor
- Extremely slow



- + Inexpensive; good performance
- Average build quality

Best Buy Gold in this category. There is a catch, however: the size of desktop PC hard drives has increased, and 250 GB hard drives are common today. A 160 GB hard drive could therefore be insufficient.

Not far behind in the final score tally is the Seagate Pushbutton Backup 200 GB, priced at Rs 8,400. It has a feature set similar to that of the Gold winner, and even showed better performance. But price was the sore point, and this drive was therefore adjudged the winner of the Digit Best Buy Silver award.

MICRODRIVE-BASED EXTERNAL HARD DRIVES

With a USB drive, all you need to do is plug in the drive to a USB port, and you're ready to drag-and-drop files—it's so easy! Storage capacity is, of course, the problem. Though we're now seeing the development of USB drives with very large capacities, they're terribly expensive in terms of cost per MB.

For now, then, microdrive-based external hard drives are the solution. Every computer today comes with USB 2.0 ports: this has contributed a great deal towards popularising such drives.

This is a niche category, and only a few manufacturers make microdrives. We therefore received only three products in this category: the LaCie Carte Orange 6 GB, Qrisma 6 GB, and the Seagate 5.0 GB Pocket Hard Drive.

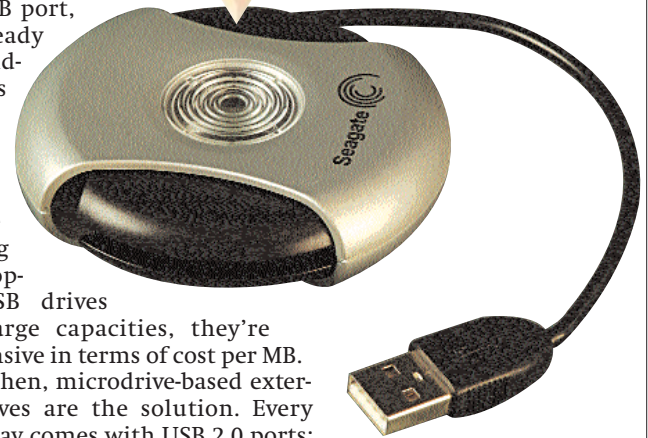
FEATURES
Cables And Accessories

All the drives here use the USB 2.0 interface. Only the LaCie came with a USB extension cable. This proves very useful if the computer does not have front USB ports and if the area around the USB ports is congested. All the drives have retractable USB ports, and they can be swivelled by 90 degrees to accommodate the drives in difficult-to-reach places.

Other Features

The LaCie Carte Orange drive is credit card-shaped. It is quite rugged, as is the case with all the LaCie drives we received. Orange in colour and with a retractable USB connector, this one would surely be a hit with the ladies.

The Qrisma has a small form factor, and it's just a bit larger than the LaCie. The body is of black plastic, but it doesn't seem strong at all. The retractable USB connector pops out at the flick of a button at the front of the drive, but we found doing this a bit tricky—the button is quite hard to press.



Seagate
5.0 GB Pocket Hard Drive

The Seagate 5.0 GB has a completely different design. It is doughnut-shaped, except for the hole, of course. The retractable USB cable is wound round the circumference, and the mechanism is excellent. A blue LED indicates drive activity.

Since these drives are meant to be carried around often, they ought to be light. All the drives are, indeed, small enough to easily fit in a pocket, and weigh very little, too. The Seagate 5.0 GB, which is quite old, and which was also featured in our external hard drive shootout of last year, was considered lightweight back then—it weighs just 63 grams. But this time round, this was the heaviest of the drives in this category! The LaCie weighs 60 grams, and the Qrisma 6 GB is the lightest of them all, tipping the scales at just 30 grams!



LaCie Carte Orange

Performance: Synthetic Tests HD Tach RW

The CPU utilisation of the drives in this category was very low—practically insignificant. As Random Access time goes, the Qrisma was the slowest, scoring 51.4 seconds, while the Seagate scored 26.1 seconds.

The Average Read and Write speeds of the LaCie and the Seagate drives were almost identical. The LaCie exhibited peculiar behaviour: while it scored the highest in the Average Read test with 7.4 MBps, it scored the lowest in the Average Write test with 3.3 MBps.

SiSoft Sandra 2007 Engineer

The Qrisma drive failed to complete the SiSoft Sandra test, and we repeated the test several times, but with the same result. We therefore had to leave it out of this test. The Seagate edged a little ahead of the LaCie drive in all the disk read and write tests. The LaCie was better by a tiny margin in the access timings.

Performance: Real-World Tests

We knew that real-world tests with these drives was going to be a pain, because microdrives are slow! When we transferred 1 GB of assorted files to the drives, the Qrisma was very slow,

taking 460 seconds. The LaCie and Seagate drives were faster, taking 287 and 299 seconds respectively. While copying the assorted files from the drive, the Qrisma was slower than the other two, but not by a large margin.

When we transferred the 1 GB sequential file to the drives (this tests the write performance of a drive), the Qrisma was again the slowest, taking 229 seconds, while the LaCie and Seagate got the job done in 187 and 169 seconds respectively. While copying the file from the drive, the picture was completely different: the Qrisma was the fastest at 120 seconds, while the Seagate took 128. The slowest here was the LaCie at 169 seconds.

We then performed the internal-transfer test on the drives. The Qrisma crawled, taking an impossible-sounding 2682 seconds for the assorted file and 2554 for the sequential file copy. The LaCie and the Seagate took 539 and 508 seconds respectively in the assorted file copy, and took 512 and 603 seconds respectively in the sequential file copy test.

The last test we conducted was the 1 GB assorted data transfer to and from the drive simultaneously, which, as we've mentioned earlier, stresses the drive mechanics to the utmost. Here, too, the Qrisma lagged behind by miles, taking 3024 seconds to copy the files, whereas the LaCie took 973 seconds and the Seagate took 696.

The Qrisma is without a doubt the slowest of the three drives in this category. But if you want a lightweight drive that's easy to carry around, and can put up with slow transfers, it's the drive for you.

Our Conclusion

As in the earlier two categories, price was taken into consideration in order to decide the winners. The Seagate 5.0 GB drive has the best cost per MB at 94 paise. The drive also performed better than the other two, and was therefore adjudged the winner of the Digit Best Buy Gold award.

The LaCie Carte Orange with its better features, rugged design and good performance was declared the winner of the Digit Best Buy Silver award.

So What's To Come?

The capacities of the external hard drives we tested rival those of their internal counterparts. This is primarily because internally, external drives are, after all, internal drives—they are only housed in an enclosure with an interface converter.

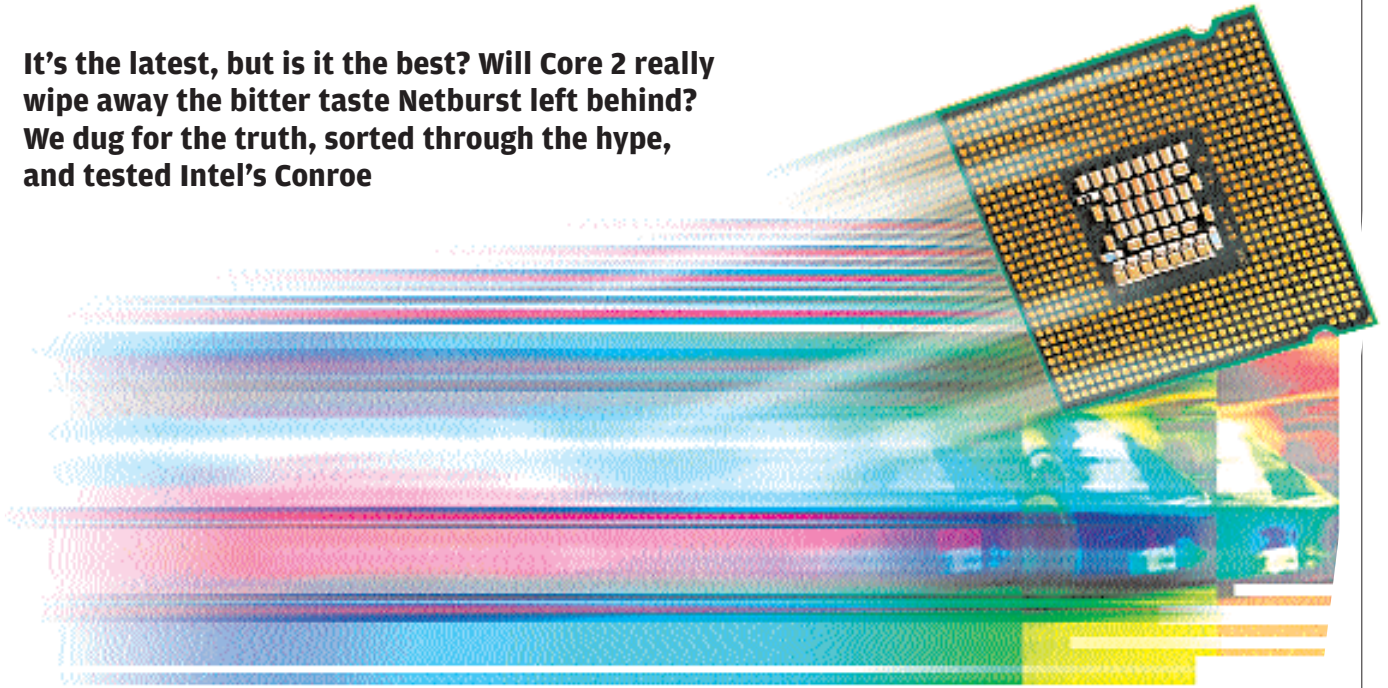
Some motherboard manufacturers have been advocating the use of SATA drives as external drives, providing brackets to externally connect a SATA drive without the need to open up the cabinet. If this trend catches peoples' fancy, then along with the growing number of SATA plug-n-play-capable motherboards, you can expect SATA drives to be used as external drives in the months to come. ■

jayesh_limaye@thinkdigit.com

Contact Sheet		External Hard Drives		
Brand	Company	Phone	E-Mail	Web site
Freecom	J. S. Equipments	022-23810713	jse@vsnl.com	www.freecom.com
Iomega	Neoteric Infomatique Pvt Ltd	022-39828600	sales@neoteric.co.in	www.iomega.com
LaCie	Neoteric Infomatique Pvt Ltd	022-39828600	sales@neoteric.co.in	www.lacie.com
Qrisma	J. S. Equipments	022-23810713	jse@vsnl.com	www.qrisma.com
Seagate	eSys Distribution Pvt Ltd	011-41811694	msinghal@esysmail.com	www.seagate.com
Transcend	Mediaman Infotech Pvt Ltd	022-23828100	sales@mediamangroup.com	www.transcendusa.com
Western Digital	Mediaman Infotech Pvt Ltd	022-23828100	sales@mediamangroup.com	www.westerndigital.com

Here Comes AMD's Nemesis!

It's the latest, but is it the best? Will Core 2 really wipe away the bitter taste Netburst left behind? We dug for the truth, sorted through the hype, and tested Intel's Conroe



Imaging Shrikrishna Patkar
Photograph Jiten Gandhi

Michael Browne

With Intel's Core 2 Duo having been officially released, it's time to put all the rumours floating around to rest—rumours of how Core 2 Duo a.k.a. Conroe, leaves even AM2 processors chewing the dust, while consuming less power. More for less? We're a sceptical lot at *Digit*, and are not given to believing rumours concerning anything in the PC realm until we get down and dirty with it ourselves. Seeing is, after all, believing; and we just *had* to see this!

Having just gotten our greedy paws on (and off) the AM2 5000+, we were somewhat dissatisfied. Performance was at best, just a tad ahead of what 939 AMD64 dual cores delivered. The switchover to a new platform didn't affect much of anything as far as the AMD corner goes.

Imagine our excitement when we received a shiny new Conroe—the X6800, no less—and

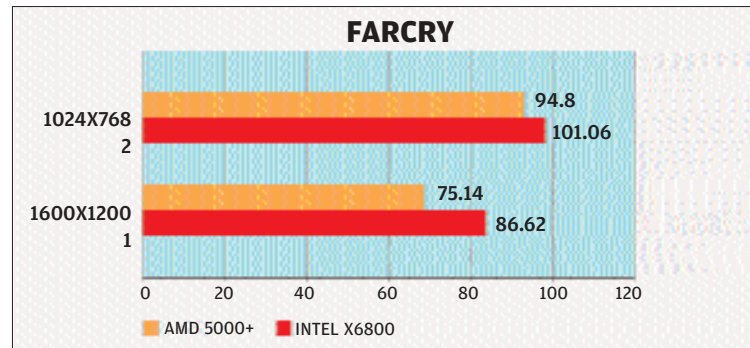
its faithful compatriot, the Intel 975XBX. The X6800 is a 2.93 GHz Extreme Edition; in layman's terms, it's *Top Of The Line!* The Intel 975XBX is, of course, somewhat a known identity: the board has been around for some months now.

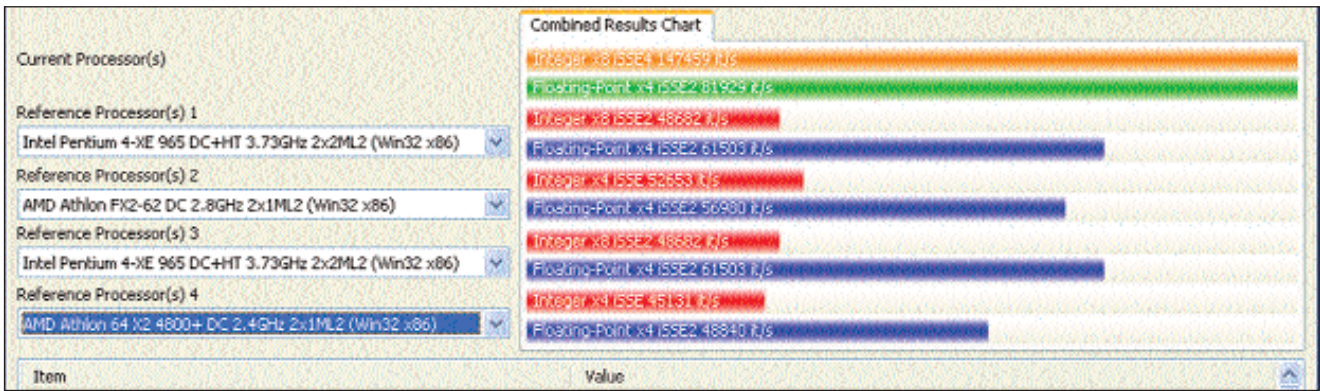
Combination, Innovation, Redefinition

Intel had some serious thermal issues with their Netburst architecture, and this pervaded right through their dual-core series as well. AMD was relatively well-off:

their Athlon 64s performed better per clock, and ran much cooler in the bargain. Prescotts were termed "mini nuclear reactors" for the amount of power they consumed, while AMD 64s and the X2 dual-cores were a runaway success in 90 per cent of the benchmarks we used.

Conroe represents not just a change in architecture but a redesign from scratch. The Conroe incorporates the best elements of the Netburst architecture, and combines the winning features of Intel's Pentium M and





SiSoft Sandra 2007 CPU multimedia benchmark. The difference is alarming!

Core Duo mobile range of processors, along with, of course, a number of innovations. What emerges is a completely new product, a combination of the best, a regression of the worst.

Let's take a look at the Core 2 family of processors, and also compare them with a couple of older processors.

Intel has continued with their 65 nm fab, but the biggest improvement we see is in the steep reduction of die size, meaning Intel can churn out Conroe's much cheaper than their older-generation processors!

The Benchmarks

Our Core 2 Extreme booted into a speed of 1.6 GHz. This came as a surprise, but we realised that the multiplier is unlocked (only the Extreme version has this feature). The processor can throttle down to 1.6 GHz (the multiplier being 6, the FSB being 266, quad-pumped). When needed, the multiplier will shoot up to 11, which is its maximum value.

To test the Conroe, we used the Intel 975XBX "Bad Axe" motherboard, based on the Glenwood

975 Express chipset. We used 2 GB of memory (dual-channel configured)—Corsair's XMS 2 DDR2 800 MHz timed at 4-4-4-15. The graphics card was an Asus X1900XTX. All tests were performed at these timings with no overclocking whatsoever. As you'll see, Conroe doesn't really need it!

Super Pi—a very well-known CPU benchmark—was run first. Its 1M test completed in 17.593 seconds, a new record in our labs. The AMD 64 5000+ took 33.110 seconds for the same test. Amazing: nearly *double* the performance for the Conroe.

We then ran Future Mark's PC Mark 05; here the Conroe scored 7649. The CPU benchmark read 7273; the AMD 64 5000+ at 2.6 GHz gives just 5348, another victory for Conroe. However the Core 2 X6800 is targeted at the AMD FX 62 and not the 5000+, which is a couple of notches lower on AMD's AM2 processor line-up. Interesting days to follow, lets play the wait and watch game!

Our third benchmark was the Multimedia Instruction test under SiSoft Sandra 2007. We've

decided to let the pretty picture above speak for itself.

Look impressive? We were as awestruck as you probably are right now! Victory, and how! Strike three!

Let's look at a game benchmark now. We ran *Far Cry* with the version 1.32 patch installed, which is one of the more CPU-intensive games around, and which scales very well with hardware changes. We used the same memory and graphics card on both platforms. The motherboard we used to test the 5000+ was the ASUS M5N SLI 32, based around NVIDIA's latest nForce 590 SLI chipset.

Worth The Hype...? Yes!

That's the answer! The Conroe was well worth the wait. The Pentium 4 and its follies seem a distant memory now, and at least this time round, Intel seems to have gotten things very right. The Conroe becomes the fastest thing that we have laid eyes on, and we're deadly serious. Unlike most platform upgrades which improve performance by narrow margins—AMD's AM2 VS 939 is a good example—the Conroe is seemingly millennia ahead!

These are little more than initial reactions at best, but some where down the line, things can only get rosier for Intel. We're anxiously awaiting the FX 62, so expect a very comprehensive benchmark of both these heavyweights very, very soon.

The real winners, though, are us, the users. With the lower versions of the Conroe promising very competitive rates (which will push down the rates of older-generation processors even more), the time for an upgrade for all those hopefuls seems now!

Hold on a bit, though—Conroe's will take a little time to become readily available. ■

michael_browne@thinkdigit.com

The Core 2 Family, Predecessors and the competition					
Processor Model Number	Core (GHz)	Bus Speeds	L2 Cache	Mfg. process(nm)	Transistors (millions)
INTEL					
Core 2 Extreme (X6800)	2.93	1066	2x2 MB	65	291
Core 2 Duo E6700	2.66	1066	2x2 MB	65	291
Core 2 Duo E6600	2.4	1066	2x2 MB	65	291
Core 2 Duo E6400	2.13	1066	2x1 MB	65	167
Core 2 Duo E6300	1.86	1066	2x1 MB	65	167
Pentium D XE965 (Presler Extreme edition)	3.73	1066	2x2 MB	65	376
Pentium D 930 (Presler)	3	800	2x2 MB	65	376
AMD					
AMD 64 FX 62 (AM2)	2.8	2000	2x1 MB	90	227
AMD 64 5000+ (AM2)	2.6	2000	2x512 KB	90	154



Bazaar

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

AM2 5000+ And ASUS M5N SLI 32 AMD 64 + DDR2 = AM2

AMD has moved to the newer DDR2 memory with its 90 nm, Fab 30 plant in Dresden, Germany. The new AM2s are 940-pin processors, up one pin from the older 939 series.

We got an AM2 5000+ CPU, an ASUS M2N 32 SLI, and a dual-channel 2 GB kit of Corsair DDR2 800 MHz RAM. The AM2 5000+ is a top-of-the-line CPU clocked at 2.6 GHz. It features a humongous 256 KB of L1 cache (128 KB for each core), and 1 MB of L2 cache (512 KB for each core).

Feature-wise, this motherboard has nearly everything needed to keep you future-proof for at least a couple of years.

Our memory subsystem consisted of 2 GB of Corsair's high performance XMS 2 series DDR2 800 MHz memory. The memory is timed at 4-4-4-12, which is sufficiently low for the gamer audience. To test such a setup you should have the best graphics card out there as well, so we used two XFX 7900 GTX graphics cards in SLI mode.

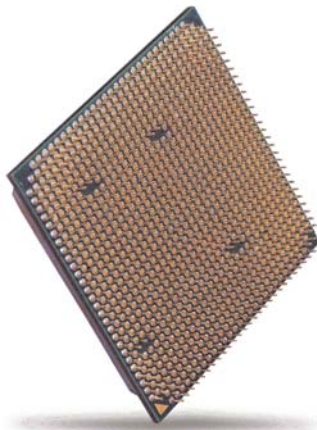
very decent memory bandwidth score of 7294 MBps. This Science Mark score is encouraging, because there was scepticism about whether the additional bandwidth that the DDR2 memory provided would be utilised or not.

Future revisions will only see this figure go up. Even in its current avatar, it's much more than the theoretical cap of 6400 MBps that DDR limits memory bandwidth to, although on the negative side, it's still short of the 12.8 GBps that DDR2 800 in dual-channel mode is capable of.

For some real-world testing, we decided to fire up a few games on this monster. Running *F.E.A.R.* (the latest card killer from Monolith), we got an average fps score of 119—this at 1024 x 768 with 4x Anti-Aliasing and 8x Anisotropic Filtering enabled. Soft Shadows were kept on. The game looked surreal, and the visuals excellent!

We tried various resolutions and just couldn't get this rig to slow down. Even at 2048 x 1536, with 16x AF and 4x AA as well as all the eye candy enabled, the 7900GTX duo hardly seemed to sweat, with an average fps of 51. 3D Mark 06 & 05 returned blazing scores of 8847 and 12246 respectively.

Although these are strictly graphics



There is a 2 MB L2 cache version available as well, the 5200+, which is clocked identically.

ASUS, whose enthusiast boards are well-known, have delivered another beauty in the M2N32-SLI Deluxe. It's based on NVIDIA's latest nForce 590 SLI MCP, and features top-end enthusiast features such as two x16 PCI express slots, a unique 8-phase power design, e-SATA (external SATA), and complete silence via a single-piece copper heat pipe setup, which looks cool while keeping components that way!

Once set up, the rig looked mean, with the CPU heat sink's copper pipes blending in well with all the copper ASUS crammed onto the board. The two huge XFX 7900 GTX cards added to the monster look.

Super Pi gave us a 1M score of 33.110, which is on par with the earlier 939 processors of a similar clock speed. Considering that the AM2 platform is new and that future refinements can only improve performance, this score is great.

PC Mark 05 gave a CPU score of 5348—very decent—and a memory score of 4886, which seemed a tad low. Science Mark 2.0 gave a

Bazaar is back!

We've re-introduced the Bazaar section—by popular demand from you, our dear readers!

For those of you who have been with us for some time, the section remains the same: this space is devoted to reviews of the latest hardware and software to have hit the market—some great, some average.

We trust the reviews here will help you make better, more informed purchase decisions—besides bringing new products to your notice.

benchmarks, the CPU and memory subsystems do play a significant role here, and the AM2 5000+ quite simply blew us away!

This was a sneak peak for us as well as to what the next generation of CPUs and platforms in general are capable of, and we weren't disappointed. AM2s cost a bomb right now; ditto the nForce 5 series of motherboards. However, with Intel's Conroe round the corner, it makes sense to hold on to your wallet just that bit longer!

Specifications

AMD AM2 5000+
Dual-core, 2.6 GHz, 512 KB x 2 L2 cache, 90 nm fab process, 2000 MHz system bus speed

ASUS M5N SLI 32
nForce 590SLI chipset, Socket AM2 (940 pin), 2 x 16 PCIe lane graphics slots (SLI-ready), passive heat-pipe cooling

Contact: AMD India Ltd
Phone: 080-41372400

E-mail: deepanshu.sharma@amd.com

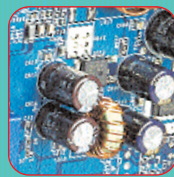
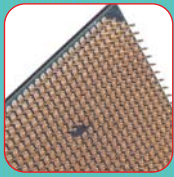
Web site: www.amd.com

Price: Rs 32,000 (processor);

Rs 46,000 (processor + motherboard)

RATINGS

Performance	★★★★★
Features	★★★★★
Build quality	★★★★★
Value for money	★★★★
Overall	★★★★☆



Forsa 7600GS

Affordable and able

A new name in the graphics card market in India, Forsa's 7600GS is based around NVIDIA's mid-level 7 series chipset, the 7600GS. Like the mighty 7900 GTX, this chip, too, is manufactured using NVIDIA's latest 90 nm fabrication process. The core is clocked at a sedate 400 MHz, while the 256 MB of GDDR2 memory is clocked at 800 MHz. The 7600GS is an underclocked variant of the 7600 GT core, the successor of the much-acclaimed 6600 GT. This, coupled with the 12 pixel shader / 5 vertex shader architecture, means that this card is reasonably well equipped to run all but the most demanding games (such as *F.E.A.R* and *Oblivion*), and at all but the most demanding resolutions.

The 7600GS chipset fully supports Shader model 3.0, coupled with NVIDIA's Cine FX 4.0. All this means you

won't miss out on the eye candy, and can crank up the visuals to high settings in most games. The card is nicely laid out with a decent cooler and silent fan combo, which keeps temperatures in check efficiently.

The Forsa 7600GS performed decently in our tests—43-odd frames in

DOOM 3 at 1024 x 768 at ultra high settings with 4x Anti-Aliasing

enabled is not by any means bad. The card does take a hit with AA and AF enabled, and as the *Far Cry* test shows, enabling newer features such as HDR (High Dynamic Range) will further take a toll. For the gamer on a budget who can do

without the over-the-top eye candy like AA and HDR, you'll be rewarded with some sweet frame rates, and since you only shell out Rs 6,700, the deal's sweet. We were impressed by the frames we got in *F.E.A.R*, very decent for such a card, since this game engine brings even the fastest cards down to a crawl! Forsa is a little skimpy on the bundled contents though—no games, and only a single S-Video connector. For a mid-range card, we'd have appreciated at least one full-version game.

Specifications

NVIDIA GeForce 7600GS chipset, 256 MB DDR2 memory, core speed 400 MHz, SM 3.0 support, NVIDIA's Cine FX 4.0

RATINGS	
Performance	★★★★
Features	★★★★
Package contents	★★★★
Value for money	★★★★
Overall	★★★★

Contact: Shree Sagarmatha Pvt Ltd
Phone: 022-23065114 / 23200032
E-mail: sagarmatha_mumbai@mtnl.net.in
Web site: www.techcomindia.com
Price: Rs 6,700

JBL ON TIME

Posh and pricey

JBL's ON TIME is an iPod dock that integrates sound with a digital clock, making for a good bedside portable audio player. Available in iPod white and black finishes, the design is elegant. Subtle use of chrome, a blue backlight, and an inverted LCD display blends well with the white body.

Apart from good looks, the ON TIME dock is peppered with interesting features. To begin with, the universal dock ensures compatibility across a wide generation of iPods and also nano players. When docked, these players are automatically charged. The dock offers rudimentary controls such as sound, source selection, etc., but for skipping tracks, one has to use the iPod controls. The dock has an auxiliary input which allows for connecting other MP3 players, laptops, etc. It integrates FM and AM radio as the third audio source, and setting up preset stations is a snap.

The dock integrates a nice digital clock with two alarms and the snooze function. Setting up the alarms is quite simple, and the snooze timer can be set from as low as one minute to a maximum of 30 minutes. As for the alarm tone, you can choose to wake up to your favourite song from the iPod. The large reversed LCD display has good contrast and is quite sharp, so the digits are legible from a distance.

Coming to the audio quality, it leaves a lot to be desired. The ON TIME, despite being from JBL, doesn't inspire much: it lacks clarity and depth when the volume is set below 30 per cent. The speakers start sounding better when the volume is raised past the 50 to 60 per cent mark. Now that's not ideal for a bedside player, which will mostly be set at low volumes.

An interesting feature includes a light sensor that regulates backlighting on the fly, and this works pretty well. The dock has an audio-out that can be connected to an active sub-woofer for additional boom.

Priced at Rs 17,990, JBL's ON TIME is expensive for sure, but then lifestyle products are more about exclusivity than price. Based on the average audio quality, however, we cannot recommend the ON TIME as a good buy.

Specifications

6 W neodymium speakers and tweeters, universal iPod dock, 3.5 mm mini stereo auxiliary jack, sub-woofer out, and frequency response of 70 Hz - 20 KHz

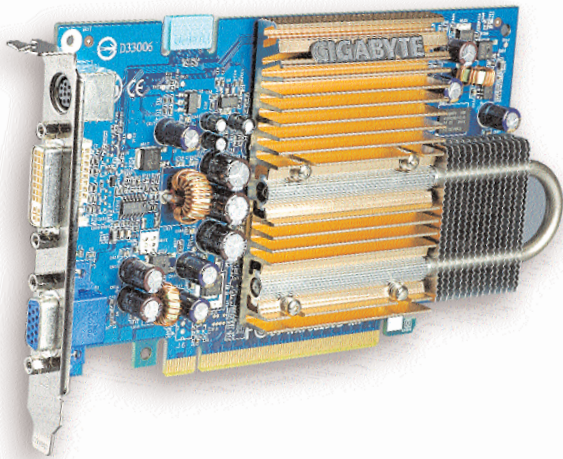
RATINGS	
Performance	★★★★
Ease of use	★★★★
Build quality	★★★★
Value for money	★★★
Overall	★★★★

Contact: Shahil International
Phone: 022-30912565 / 23862345
E-mail: firoz@fxaudio.com
Web site: www.fxaudio.com
Price: 17,990



Gigabyte GV-NX76G256D-RH

A bundle of joy



RATINGS	
Performance	★★★★○
Features	★★★★○
Package contents	★★★★○
Value for money	★★★★○
Overall	★★★★○

Here's another card based on NVIDIA's 7600GS chipset, with 256 megabytes of video memory onboard. The Gigabyte GV-NX76G256D-RH is clearly positioned at

the discerning buyer who wants a clear combination of value and performance without compromise.

The graphics core and memory modules are passively cooled, that is, with only a heat sink, no fan, and a metal plate on the back to aid cooling. The heat sink has a heat pipe attachment, and the heat sink is buff-finished, which aids in dissipation—unlike powder-coated heat sinks, which trap heat instead.

Needless to say, we didn't find any stability issues due to heat through our barrage of tests.

The Gigabyte 7600GS turned out to be a good performer, and returned scores that were either on

par or slightly better than those of other 7600GS-based cards.

This card comes with a three-year warranty, costs Rs 10,000, and comes bundled with *Serious Sam 2* and Power DVD 6—very nice. You will also find all the connectors you need, and good-quality ones!

Specifications

NVIDIA GeForce 7600GS chipset, 256 MB DDR2 memory, core speed 400 MHz, SM 3.0 support, NVIDIA's Cine FX 4.0

Contact: Gigabyte Technology India Ltd
 Phone: 022-26526696 / 56902210
 E-mail: sales@dlink.co.in
 Web site: www.gigabyte.com.tw
 Price: Rs 10,000

Victorinox Swiss Pen Drive 128 MB

Swiss Army drives?



It's a pen, it's a pen-knife, with a nail file and screwdriver all bundled into one! And it's from the same world-renowned manufacturer (Victorinox) of Swiss Army knives.

The Victorinox pen drive is excellently built, and the fit and finish is top-of-the-line. Not only is the pen drive extremely well built, the other accessories retain

their utility, and are not just part of the show. The knife, for example is very sharp, and it is quite suitable for minor cutting jobs. The screwdriver is sturdily built, well integrated with the device, and can be used even on the most stubborn of screws. This pen drive also has a small red LED that can be activated by pressing on the Victorinox logo embossed on the body.

Even swapping of batteries is easily achieved—all you need to do it insert a clip from one side into the small orifice on the side, and the battery slides out from the opposite side.

In order to clean the device, you can remove the pen drive and battery components, and then dip the rest in warm water—this is actually recommended in the manual, and speaks volumes about the build quality.

Coming to performance,

the pen drive is blazingly fast! No doubt about it: it's much faster than nearly all the other pen drives we've tested. During regular usage, we copied 16 MB of data, and even before the file copy dialog box could appear, the data was done copying!

This is a really well-built pen drive and offers top-of-the-line performance as well as features. Rs 3,250 might seem like a steep price for a pen drive, but this is Victorinox, for heaven's sake! It's a collectors item, and a device you'd like to show off.

Specifications

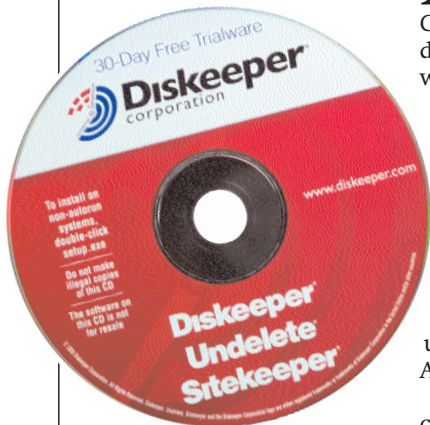
128 MB, USB 2.0 interface, contains utility tools—pen-knife, screwdriver-cum-nail-file, scissors, LED light with swappable battery

Contact: J. S. Equipments
 Phone: 022-23810713 / 23810718
 E-mail: jse@vsnl.com
 Web site: www.jseindia.com
 Price: Rs 3,250

RATINGS	
Performance	★★★★★
Features	★★★★★
Build quality	★★★★★
Value for money	★★★★○
Overall	★★★★○

Diskeeper 10 Professional

Keeping it organised



Diskeeper 10 is the latest offering from Diskeeper Corp., which makes disk defragmentation easier, and works for standalone desktops and networks as well. When a drive is fragmented beyond a certain threshold, a warning is issued for you to take prompt action. You can even set this warning to be e-mailed to your system administrator, using the Diskeeper's Administrator edition.

Defragmentation tasks can be automated using two customisable profiles. This apart, there is also an option of customisable boot time defragmentation and defrag while system is idle. Diskeeper 10 can save a log of the task performed, display the status of the file system as defragmentation happens, show current access time, how much it can improve after

defragmentation, etc. You can also view a "history" that tells you how many fragments have been eliminated in earlier scans.

Diskeeper 10 is available in five versions: Professional, Professional Premier, Administrator, Server Standard and Server Enterprise. The Administrator edition can even be remotely deployed across a network and tasks scheduled on remote PCs.

Specifications

Defragment scheduling, defrag during idle, save job reports, issues warning when fragmentation exceeds a limit, occupies 12 MB on disk

Contact: ALADDIN Multimedia Pvt Ltd
Phone: 022-66936795/96
E-mail: arunachakravorty@yahoo.co.in
Web site: www.diskeeper.com
Price: Rs 3,000 + taxes for home license; Rs 21,000 + taxes for server license

RATINGS	
Performance	★★★★☆
Features	★★★★☆
Ease of use	★★★★☆
Value for money	★★★★☆
Overall	★★★★☆

Logitech Quickcam Image

Anybody got a light?

A slim form factor and an easy clip-on mounting makes this a practical

Webcam to carry around with laptops. The Quickcam is very touchy on the lighting front. Normal room lighting simply won't do! You need to have light focused on you to get rid of the "dots" that mar the image. Increasing the brightness does not help either. Thankfully, the driver comes with an option to optimise

capture for low-light conditions—and this works well, brightening up the image to acceptable levels without adding dots. The downside is that this option drops frame rates, making even slow movements

appear blurred. This will not concern most users though, as real-time relay via Webcams is near-impossible with the Internet speeds we have here in India.

On the upside, the camera has a 1.3-megapixel still image capture (with a dedicated button), and quality is good when the lighting is strong enough. The focus adjustment can help you attain clarity for anywhere between half a foot and 10 feet.

Specifications

1280 x 960 (1.3 MP) still image capture, 640 x 480 video capture, CMOS sensor, fits notebooks easily, inbuilt microphone

Contact: Rashi Peripherals
Phone: 022-67090909
E-mail: navinderc@rptechindia.com
Web site: www.rptechindia.com
Price: Rs 3,495



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

Everglide Titan

The pad costs more than the mouse

The Everglide Titan measures 444 x 355 mm and 4.3 mm in thickness. The Everglide logo in silvery relief on the jet black pad is eye-catching.

The material, which is silky smooth to the touch, is called "Fibertek." This is a trademark of Everglide that represents the cloth-weave found on the surface of each Everglide Titan. The micro



cloth fibres are closely woven to increase tracking precision, without affecting acceleration or deceleration of mouse movements. The Titan is thus able to deliver near-perfect tracking, especially for gamers—perfect for accurate rail-gunning in *Quake III*, for example.

Everyone will benefit from such build quality and precision, but at Rs 2,150, you can be sure that everyone but hardcore gamers will steer clear of this pad!

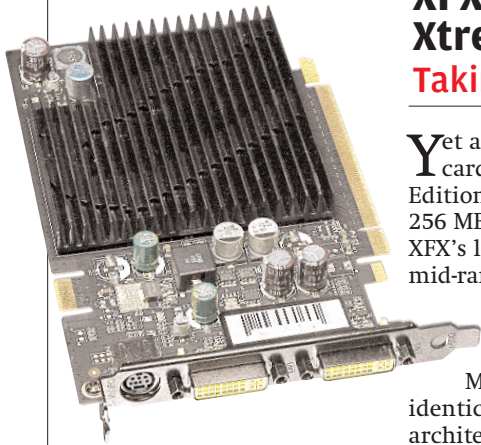
The back of the Titan is soft, and is made of a foam material that's touted to be "anti-skid"—so the mouse pad isn't going to be sliding across your table during that frantic frag session! This is one excellent product for the hardcore gamer.

Contact: Prime ABGB
Phone: 022-23896600 / 23855500
E-mail: primeservices@vsnl.com
Price: Rs 2,150

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

XFX GeForce 7600GS 256MB DDR2 DUAL DVI TV Xtreme Edition

Taking it to the Xtreme



Yet another 7600GS-based card! This Xtreme Edition card comes with 256 MB of VRAM, and is XFX's latest offering to the mid-range market. The core has been factory-tweaked—hence the “Xtreme” tag—to 500 MHz, making it identical to the faster but architecturally similar 7600GT.

This is one cool looking card: the PCB has a matte black finish, and both DVI connectors are a fluorescent green, matching XFX's brand colours (green and black). The black heat-sink is powder coated, with

nothing getting in the way of cooling. It managed a good job at cooling, and we never saw the temperature climb beyond the late 50s. The heat sink itself, however, gets much hotter than the two cards reviewed earlier.

Owing to the faster core, this card was expected to perform better than the other 7600GS cards, and it didn't disappoint: it led the other two cards by a minimum of 10 fps in our tests. The card also handled *Far Cry* beautifully with HDR off. At a resolution of 1600 x 1200 with 8x AF and 8x AA, the card managed a

commendable 55.75 fps. At normal settings, *F.E.A.R* saw 62 fps—very, very playable for a mid-range card.

The card comes with a decent bundle: *Starship Troopers* (a mediocre game), two DVI to D-Sub converters, and all the cables necessary to get you going.

Specifications

NVIDIA GeForce 7600GS chipset, 256 MB DDR2 RAM, core speed 500 MHz, SM 3.0 support, NVIDIA's Cine FX 4.0

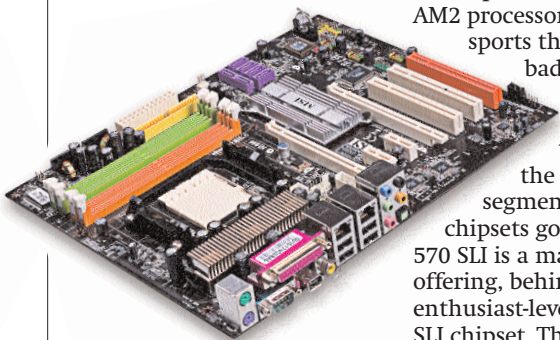
Contact: Rashi Peripherals
Phone: 022-67090909
E-mail: navinderc@rpotechindia.com
Web site: www.rpotechindia.com
Price: Rs 7,500

RATINGS

Performance	★★★★
Features	★★★★
Package contents	★★★★
Value for money	★★★★
Overall	★★★★

MSI K9N SLI Platinum

Enthusiastically built



Built around NVIDIA's spanking-new nForce 570 SLI chipset for AMD's latest AM2 processors, the K9N SLI sports the “Platinum” badge, meaning that MSI positions this product in the premium segment. As far as chipsets go, the nForce 570 SLI is a mainstream offering, behind the enthusiast-level nForce 590 SLI chipset. This chipset supports two x8 only slots in SLI mode, while the top-end 590 chipset supports two x16 slots. One major advantage for the 570 SLI chipset is, it's a single chip solution (the 590 SLI is a 2-chip solution).

Layout-wise, the board is decent, except that the IDE connector is cramped by the 24-pin power connector. A definite plus is the inclusion of three PCI slots; most SLI boards do away with at least one of these.

The board is sufficiently feature-rich. Six SATA connectors should keep

almost everyone happy, while the onboard HD-quality eight-channel sound is more than decent, even by today's relatively higher standards. One grouse we have is the quality of the chipset cooling used—a simple aluminum heat sink that gets much hotter than expected. Though we didn't face any stability issues, overclocking enthusiasts will rightfully expect at least a heat-pipe solution.

The BIOS is simple by enthusiast-board standards. Setting up and installation was easy enough. Our DDR2 800 MHz memory didn't boot into JEDEC-prescribed timings, but thankfully, the BIOS allowed us to easily remedy this. We ran the gamut of SiSoft Sandra's tests first and got some

interesting results. The Memory Bandwidth test gave decent results, just on the shy side of 8500 megabytes per second—a good score. We set up a 7900 GTX on this setup, and got a very respectable score of 7115.

We decided to set up a RAID array to check the onboard SATA RAID controller. With 112 MBps as a drive index in SiSoft Sandra 2007, the storage subsystem is juicy indeed!

Overall, the MSI K9N SLI Platinum is a good performer, and a very well-built board. Ideal for the gamer or enthusiast who won't skimp on the other “performance” components that will complement this motherboard.

Specifications

nForce 570 SLI chipset, Socket AM2, two x8 PCI express SLI-ready slots (single slot functions in x16 mode), six Serial ATA 300 MBps ports, HD 8-channel audio (Azalia) onboard.

Contact: MSI India
Phone: 011-41758808
E-mail: info@msi-india.com
Web site: www.msi.com.tw
Price: Rs 10,500 + VAT

RATINGS

Performance	★★★★
Features	★★★★
Build quality	★★★★
Value for money	★★★★
Overall	★★★★



Tips & Tricks

SECRETS THAT KEEP YOU AHEAD IN THE RACE

TIPS

Firefox	87
CorelDraw X3	91
Warcraft 3	94

30 MINUTES EXPERT

Oxygen Phone Manager	90
PVR Software	92

FIREFOX



Illustrations Harsho Mohan Chatteraj

A lot of Firefox's behaviour is controlled by typing in "about:config" into the title bar and modifying the values you see there. In the following, we'll be referring extensively to these values. Modifying them is a right-click away. Just open the about:config page once, and you'll get the idea! In the following, when we talk about something like "browser.xxx.xxx", we're talking about that value in the about:config page.

We Don't Like Ads, So...

Before we get into a few Firefox hacks, there are three extensions we think are so essential to your Firefox browsing experience, we can't not mention them. The first of these is Adblock, which is available from <http://adblock.mozdev.org>. Adblock

senses what elements of a page are ads, and can either just hide them or remove them from the page. Browsing was never this fast!

Adblock needs a filter list with words indicative of ads. You could try populating it on your own, and we'd tell you how, but you can...

Have It All Done For You!

We beg you to visit www.pierceve.com. There you'll find Adblock Filterset.G Updater. This little extension synchronises Adblock with Filterset.G—which adds everything to Adblock's filter list that you'd need. It checks for updates, something like an anti-spyware. For example, you'll often see ads getting downloaded from atwola.com; this site is in the list. As more ad servers spring up, and as different tags start getting used for ads, the list gets updated—ensuring you'll almost never see an ad again!

And A Flavour Of Opera...

The third extension you can't live without is SessionSaver. It does just that—you close Firefox with ten tabs open, and the next time you start up Firefox—even after a system restart—all the tabs will open up! No more bookmarking tabs you're about to close! Opera users have had this functionality for a long time. For SessionSaver, visit <https://addons.mozilla.org/firefox/436/>

New Tab: In Front Or Behind?

For those used to tabbed browsing, it does make a difference whether a tab appears in front or opens silently in the background. Even for tabs that open as a

result of an action in another application, such as when you click on a link in Outlook, you can control whether to have them open in the foreground or in the background. Navigate to `browser.tabs.loadDivertedInBackground` in `about:config`. Set it to, of course, True if you want the new tab in the background.

The DNS Cache #1

`Network.dnsCacheEntries` determines how many entries should be held in the Firefox DNS cache. You might want to select a higher number than the default. The default value for this one varied depending on version. 20 is a value in some versions; it's 256 in some other versions. Change this number to match the number of sites you regularly browse per day—this is intuitive, isn't it? Also check the next setting to ensure DNS entries are kept up to date.

The DNS Cache #2

`Network.dnsCacheExpiration` determines how long cached DNS entries are held before they are discarded. The default is 60 seconds, which seems too short to us. However, before changing this setting, you need to consider the pros and cons: the longer the cached entries are held, the quicker your browsing will be, but the downside is that it will take longer for Firefox to be aware that a site that was temporarily unavailable is resolved. In any case, like we said, 60 is too low a value.

How The Cache Should Be Used

Don't confuse "cache" here with the DNS cache: this one refers to the caching of pages by Firefox. One of the most important settings in the `about:config` page is `browser.cache.check_doc_frequency`. Here are the values and their meanings:

0: Check for a new version of a page once per session (a session starts when the first application window opens and ends when the last application window closes).

1: Check for a new version every time a page is loaded.

2: Never check for a new version—always load the page from cache.

3: Check for a new version when the page is out of date.

3 happens to be the default; you can speed up Firefox a little by changing the value to 0. You'd never want 1, and you might want 2 in a few cases. Remember that if you use 2, odd behaviour might occur, mostly when the Back and Forward buttons come into play.

Memory Usage

Under `browser.cache.memory.capacity` is specified how much physical memory (in KB) is allocated to the caching of decoded images and chrome

(application user interface elements). The default is usually `-1`, meaning Firefox decides the value based on how much RAM you have. Examples are `14336` if you have 256 MB, `22528` if it's 512 MB, and `32768` if you have 1 GB.

A value of `0` here means “do not cache decoded images and chrome in memory.” And if you put in a positive integer here, you're specifying a value manually. Naturally, you'd want to set the value depending on how much RAM you have, and on your browsing habits.

HTTP Pipelining

Normally, Firefox makes one request to a Web page at a time. When you enable something called “pipelining,” it will make several at once, which speeds up page loading. Look at the following three values:

`network.http.pipelining`
`network.http.proxy.pipelining`
`network.http.pipelining.maxrequests`
 Set the first and second ones to true.

(It could already be set to true.) As for the third, set it to a number like `20`.

This could be considered flooding a server with requests, but then you want speed, right? That's not the final word, though, and some servers might not like it if you set that value too high—it could be considered a Denial of Service (DoS) attack, and you might never be able to load the page. If this seems to be happening, lower the value.

Waiting Before Rendering

The value called `nglayout.initialpaint.delay` may or may not exist on your installation; either navigate to it or create it as an Integer. This value is the amount of time the browser waits before it acts on information it receives. You'd think it should be `0`, right? Well, it is `0` in the latest version at the time of writing (1.5.0.4), but it's a positive value in some versions. You might want to set it to `0` in that case.

This is an issue of some debate—some people have reported faster browsing speeds by increasing the value from `0`. You'll therefore need to experiment. First try `0`, then try something else.

The Download Manager

Here are four things you can do about the download manager dialog. `>>browser.download.manager.showAlertInterval` dictates how long the alert message should be shown. It's in milliseconds, and the default is `2000`. You might want to set a lower value. `>>browser.download.manager.openDelay`: by default, the download manager pops up immediately for any download, that is, the value is set to `0`. You might not need the download manager at all for small downloads, such as those that take less

than a minute (`60000` milliseconds). It's for longer downloads that you might want to have a look at the progress. Adjust accordingly.

`>>browser.download.manager.closeWhenDone` is set to false by default on some installations, so the manager doesn't close itself. If you set it to true, the thing won't show up when your download is done. `>>browser.download.manager.flashCount` flashes the download manager icon in your taskbar for 2 seconds. Adjust that “`2`” according to your taste.

For Those Low On RAM #1

When Firefox caches your pages to make your browsing fast, it may cause the program to consume memory that needn't be used at all. Drill down to `browser.sessionhistory.max_total_viewers`. The value there is probably `-1`; set it to `0`. The result is usually a small decrease in the RAM used, along with a slight decrease in rendering speed, and the action is therefore recommended if you're RAM-challenged.

For Those Low On RAM #2

You can adjust a setting to make Firefox take up less RAM when it is minimised, offloading stuff to the hard disk. Create a new Boolean value called `config.trim_on_minimize`, and set it to True.

Unfortunately, it's not as simple as that: reports indicate that after you minimise Firefox, memory usage does go down, but slowly creeps up as time progresses. You'll have to test this yourself (monitoring memory usage via the Task Manager) and see if it's any good.

For Those Low On RAM #3

Firefox has a special “Back-Forward cache” for recently-visited pages, which works differently from the regular browser cache. The default setting for `browser.sessionhistory.max_total_viewers` is `-1`. This saves a set number of pages depending on your RAM; some say it saves up to eight pages if you have more than 512 MB of RAM. However, different people

say different things regarding this, but you can try changing the value to `0` for memory savings.

Automatic Updating

Firefox periodically daily checks the Mozilla Update Web site (<http://update.mozilla.org>)—in fact, once a day—to see what's new. If there are critical patches, the home page displayed at startup is replaced with a warning page. If there are any patches at all, an icon appears on the menu bar. To turn off that functionality, make sure `app.update.enabled` is set to False, and set `app.update.autoUpdateEnabled` to False. The latter setting stops Firefox from polling the Web server to see if there's anything new to report to you.

Then, there's the question of updating your Extensions—the same thing applies. The corresponding `about:config` values are `extensions.update.enabled` and `extensions.update.autoUpdateEnabled`. Set both these to False to prevent Firefox from automatically trying to update extensions.

An Appearance/Time Trade-Off

If your Bookmarks toolbar contains a lot of bookmarks that have site icons, Firefox will download them all in order to make the toolbar look pretty. Site icons can also be downloaded if the sidebar is displayed. To turn off icon retrieval, set `browser.chrome.site_icons` and `browser.chrome.favicons` to False.

A Convenience/Data-Pull Trade-Off

You'll often find yourself spending a lot of time looking at one Web page while lots of other pages are loaded into tabs behind the current tab. The most convenient arrangement is to have those tabs load their pages while they're still hidden. When you change tabs, it's likely that the page in the tab will be ready to view, and this is the default. At the same time, if you maintain, say, five tabs, you're demanding five times more data. In this age of tabbed browsing, people often open tabs “just in case.” So it could be a waste to load the background tabs.

So drill down to `browser.tabs.loadInBackground` and set it to False if you seem to exhibit the above behaviour, that is, keeping tabs open “just in case.”

Disable IPv6

On some Linux distributions, Firefox has issues with Google servers because of difficulties with the IPv6 protocol. You can try changing `network.dns.disableIPv6` to True.

Dancing Ads

Don't you hate animated GIF ads—assuming you haven't installed Adblock—dancing away while you're trying to read?

Bet You Didn't Know

Googling Made Easy

In Firefox, typing keywords in the main address bar by default searches Google for those keywords! You don't need to use the Google toolbar! The catch is that the default setting is to use the “I'm feeling lucky” option. Browse down to the String keyword.URL. Try setting it to “`http://www.google.com/search?&q=`”, which is the Google search string for general searches, without the quotes. Now when you enter a word in the address bar and press [Enter], it will take you to the Google results page.

Just go to the String `image.animation_mode` and change it to “none” to stop all animated images, or to “once” to let them run. You can revert to the default behaviour using “normal”.



The Annoying Blips!

`accessibility.typeaheadfind.enablesound` is by default set to True; the “Find as you type” feature makes a beep as you enter characters in a string that is not on the current page. The search field turns red anyway, so to turn the sound off, set that value to **False**.



How Often?

You can turn off automatic updating altogether, but some think a better idea is to select how often the checking for updates is done. `App.update.interval` determines how many seconds Firefox will wait between checking for updates (at the URL specified in `app.update.url`). The default is 24 hours (86400 seconds). You might want to change it to once a week or once a month.



Do You Need Tooltips?

Tooltips are shown by default when you hover your mouse over certain items, like when you hover it over the “new tab” button, you’ll get something like “Opens a new tab.” This is controlled by `browser.chrome.toolbar_tips`. Set it to **False** to disable tooltips. This will also disable tooltips to items on some Web pages.



A Possible Speed Enhancer #1

The `network.http.max-connections` setting determines how many simultaneous HTTP connections can be made. The default is 24 on most installations, but if you’re on a fast connection, try increasing this value to, say, 48 to allow for more open connections—thereby speeding up browsing of multiple pages.

By increasing the value of this setting, you’re only raising the maximum possible number of connections, not increasing the actual number of connections Firefox makes every time.



A Possible Speed Enhancer #2

`Network.http.max-connections-per-server` determines how many simultaneous connections can be made to a single server. The default is 8 or so. Try increasing the value for fast connections to something like 16 in an attempt to increase browsing speed. Setting this value very high, in conjunction with a high value for the settings mentioned after this one, could be interpreted by some servers as a DDoS (Distributed Denial of Service) attack, and your connection could be refused. It may also actually slow down your browsing, and



Bet You Didn’t Know

Make That Button Useful

Did you know that you could put the animated square to the top right of the Firefox window to good use? By default, when you click on it, Firefox takes you to the Firefox Central page. You can change the String `browser.throbber.url` to whatever URL you want.

it’s poor netiquette to pound servers with lots of connections from a single machine. Therefore, experiment with this value, but don’t go too high.



A Possible Speed Enhancer #3

If you are connected to a proxy, `network.http.max-persistent-connections-per-proxy` determines how many connections to keep alive at any time. The default is 4; you can try a higher value (such as 8) to improve speeds. Raising this to a very high value will stress out the proxy server, and may ultimately result in slower browsing for everyone on the proxy. So this one depends on if you’re callous and selfish—if it does lead to a performance increase, that is.



A Possible Speed Enhancer #4

If you are not connected to a proxy, `network.http.max-persistent-connections-per-server` determines how many connections to a single server to keep alive at any time. The default is probably 2; you can attempt a higher value (such as 4 or 8) to improve speeds. Similar to what was mentioned above, raising this to a very high value will stress the server you’re connected to, and will either result in a refused connection, or slower response times from the Web page for every person trying to connect to it. Again, this one depends on how selfish you are...



Image Placeholders

Do you like image placeholders? Some of us do, some don’t. It looks prettier if there is no placeholder, but then the placeholder gives you an idea of how large the image is... set `browser.display.show_image_placeholders` to **True** or **False** depending on your preference.



Highlighting In The Address Bar

`browser.urlbar.clickSelectsAll`, when set to **True**, makes clicking in the address bar automatically highlight all its contents. If you set to **False**, clicking in the address bar will just place the cursor where you click.



Switching Skins On The Fly

This is for those who have a lot of Themes (skins) for Firefox, and want to switch between them without having to

restart the browser for the new skin to kick in. The value in question here is the Boolean `extensions.dss.enabled`. If set to **True**, this option enables Dynamic Skin Switching. This means that whenever you change a theme in Firefox, its changes will be implemented and visible immediately.

Be warned that this can be buggy. Some elements in the newly-switched-to skin can become garbled. Test this one yourself to see if it’s something you need.



The Mail Client To Use

When you click on a `mailto:` link—such as “contact me” or something like that—Firefox launches a mail client, such as Outlook or Outlook Express. The String `network.protocol-handler.app.mailto` contains the path to the application that handles e-mail links. In this setting, use the full path to the executable for your preferred mail client.



The Yellow Prompt

`Plugin.default_plugin_disabled` is a Boolean value that determines whether, when viewing a page that requires a plugin that’s not installed, Firefox will prompt you to install the plugin. If you don’t want to see such prompts, set this to **False**.



Text Selection #1

The Boolean value `layout.word_select.eat_space_to_next_word` determines the selection behaviour when you double-click on a word on a page. By default, Firefox selects the word and the whitespace to the right of that word. If you set it to **False**, Firefox will only select the word itself with no extra spaces.



Text Selection #2

Going along with the previous tip, `layout.word_select.stop_at_punctuation` determines whether Firefox selects the *punctuation* around a word when it is selected by double-clicking. If this is set to **True**, the punctuation is not selected with the word. If set to **False**, additional punctuation around the word is selected: you can choose whether double-clicking on the word “(Digit)” (without the quotes) should either select “default” or “(default)”.



Another Essential Extension!

Head to www.softpedia.com/progDownload/Colorful-Tabs-Download-42192.html#download_locations. You’ll find something there that you’ll love! All your tabs are the same colour—this is not only not pretty, there’s also some functionality to be gained if the tabs are in different colours. Go ahead, download that Extension—and view tabbed browsing differently! We had to mention this one because we loved it so much!



Giving Your Smartphone Some Much-Needed Oxygen

Augment the data-management capabilities of your smartphone

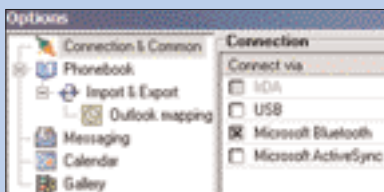
Kailas Shastry

Have you wished for your “smart” phone to be on friendlier terms with your PC, or even type an SMS on your computer? The software bundled with smartphones allows you to synchronize your contacts to your Outlook phonebook, and allows file transfers. There is a lot more you can do using third-party tools such as Oxygen Phone Manager. Let’s look at how to connect a smartphone to a PC using the Nokia 6600 using Oxygen Phone Manager (OPM) as an example.

OPM is available specifically for Nokia phones (even regular “non-smart-phones”) and for Symbian phones in general. Visit www.oxygensoftware.com and click on “More” under each section to see if your model is supported, and download the appropriate version. We’ve used the Symbian version for this workshop.

Connect The Phone

Once you open OPM on your PC, go to Tools, and under the “Connection and Common” heading, click on the kind of transfer you want to use—USB Data Cable, infrared, or



Bluetooth. If you are using a data cable to connect the phone to the PC, OPM will automatically detect it.

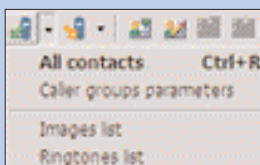
If you are using infrared or Bluetooth for connection, you must install the OPM Agent on your phone. This is available as a .sis file (which installs the OPM Agent on the phone) and can be found in the “Agent” sub-folder under the installation folder.

There are separate files for Series 60, 80 and 90—transfer the relevant file to your phone and install it. Once it is installed on the phone, open the OPM Agent, and under Options, select “Start IrDA Exchange” or “Start Bluetooth Exchange”, as the case may be.

Oxygen!

Once your phone is connected, it’s time to explore the features and functions of Oxygen! You can view, modify, and save locally on your PC the Address Book, SMS, To-Do list, Calendar, and of course, pictures and videos. To the left of the window, you’ll find the various headings in a tree structure similar to that of Windows Explorer. When you click on a heading, the relevant interface opens up to the right of the screen along with a toolbar at the top. Click on the left-most button to start transferring data from your phone to your PC.

The button next to it is used to transfer any edited data back to the phone.



You can hover the cursor on the toolbar buttons using the mouse to get a prompt that tells you the function of particular buttons.

SMSing

An interesting and useful feature of the software is the ability to type an SMS, which can be sent through the phone—particularly useful if you need to send an urgent message while working on an equally urgent document. Go to SMS > Send SMS. In the box that follows, you can enter the number you want to send the message to, or simply click on the “To” button to select individual recipients / groups from the phonebook.

Exploring

Navigating to various folders in the phone is similar to the way you do it in Windows Explorer. Click on Gallery in the menu and then select Images, Sounds, or Videos, depending on the content you want to copy.

You can copy media files between the PC and the phone, and also transfer from the main memory to the add-on memory card and vice versa.

If you want all the phone data to be read in one go, go to File > Read all data (if you are on a Bluetooth or IrDA connection, this may take some time). You can then choose the type

Access Denied!

You can restrict access to your phone by assigning a password. Go to **Phone > Phone Access > Set Password**. You will need this password to access your phone though Oxygen Phone Manager later.

of data you want to access and back up (Phonebook, Messaging, Gallery, etc.) without waiting for the data to load onto the PC.

Saving And Restoring The Phonebook

How often have you heard someone who has lost or damaged his mobile phone say, “I lost all my contacts!” Backing up your phonebook is just a few clicks away with OPM.

In the main window, go to **Phonebook > Save to file**. Choose the Symbian phone format if you want to be able to export the contacts to another Symbian phone. To add contacts from an already saved file, go to **Phonebook > Load from file**, and choose the file that contains the contacts saved earlier.

Managing PIM Functions

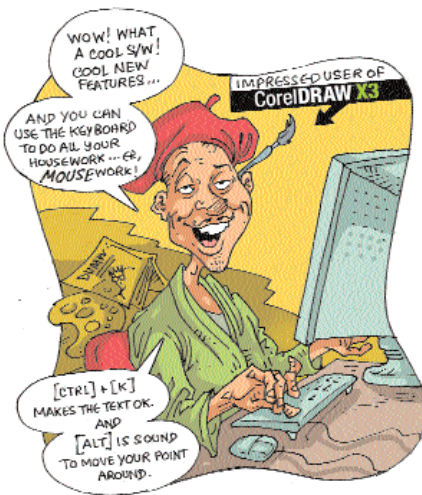
If you use your smartphone as a mini secretary setting reminders for various events, you might find it inconvenient to manage many appointments given the screen size and the small keypad. With Oxygen, you can manage all the appointments and even sync it with your Outlook reminders. Click on the “Calendar” heading at the left of the screen to open it up.

You’ll be presented with a calendar-like view, along with timelines for you to easily set your reminders and events. Once you’ve set all your desired reminders, you can export it in to various formats such as RTF, HTML, and more, and take a printout with the formatting intact. These functions are available through the little toolbar.

Depending on the calendar service offered by your Symbian phone, Calendar entries can be of three types—Meeting, Memo, and Anniversary. You can also import birthdays from the phonebook by clicking on Import and selecting “Import Birthdays from Phonebook”. ■

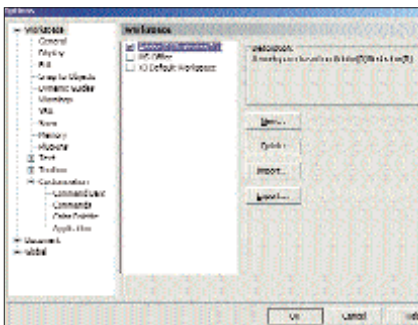
readersletters@thinkdigit.com

CORELDRAW X3

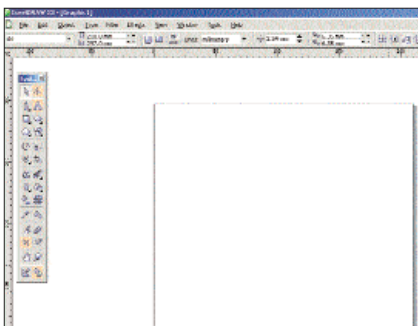


Choose Your Environment

If you've already been using Adobe Illustrator and are testing the waters of CorelDraw X3 but find yourself a little lost with the interface, there is a simple way to make you feel more comfortable—just change your workspace to look more like Illustrator! Go to **Tools > Customization**. In the dialog, choose “Workspace” at the top and select from an Illustrator-like workspace, the default X3 workspace or even an MS Office-style workspace!



Choose from three workspaces



Is it CorelDraw? Is it Illustrator?]

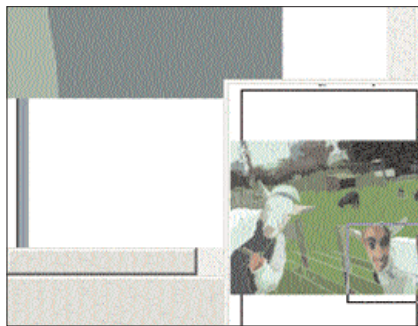
Moving Around The Workspace I

If you find yourself using the keyboard quite a bit while moving

objects around your document, you don't need to keep switching to the mouse to scroll or move to another area of the document. Hold down [Alt] and use the arrow keys to conveniently move around the workspace.

Moving Around The Workspace II

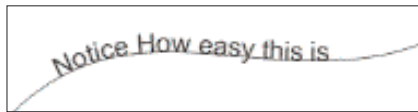
If you've zoomed into your document *really* close and can't be bothered with using the scrollbars or middle-click to move around, there's an easier way. At the bottom right corner of the workspace is a small white square—click on it and hold to bring up a miniature of your document. Now use this to navigate to any part of the page without ever having to zoom out.



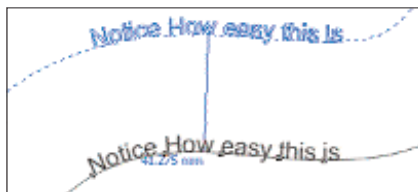
Use the little white square to navigate your document

Creating Text On A Curve, I

To create text on a curve, simply select the text tool and click on the curve. The text will now follow this path, and become a child object of the curve. That is, you can move the text independently, but it will still follow the shape of the curve, but when you select and move the curve, the text will move with it.



Create text on a curve

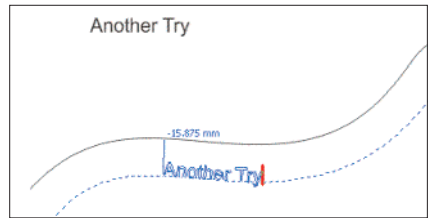


Move the text object to tweak the look

Creating Text On A Curve, II

If you've already got the text ready and a curve ready, and wish the twain should meet, rather than having to follow the procedure above, do this: With the text selected, choose **Type > Fit Text To Path**. Hover the mouse over the

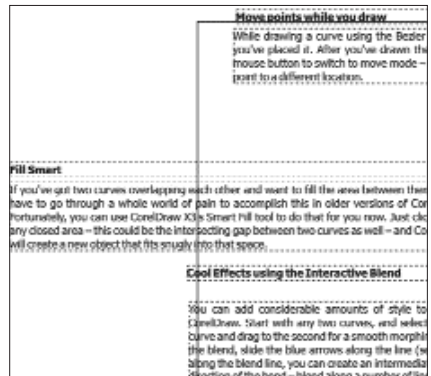
path and move it around to see what the final result is going to look like, and click when you feel satisfied. This works great if you have multiple paths and want to choose which one to wrap your text on—just hover over a path to make it a candidate!



Get a live preview of what your path-following text is going to look like

Blow Text Apart

If you have a large box of text and want to treat each paragraph separately, you can use [Ctrl] + [K] to break the text into individual paragraphs and then manipulate them as you feel. To combine the paragraphs back together, hold down [Shift] and select the paragraphs you want to combine and hit [Ctrl] + [L]. Mind, though, that the paragraphs don't remember what order they were in before you broke them apart, so they will combine in the order that you selected them.



Break text into paragraphs with [Ctrl] + [K]

Move Points While You Draw

While drawing a curve using the Bezier Tool, you can use [Alt] to move a point around after you've placed it. After you've drawn the latest point, hold down [Alt] *without* leaving the mouse button to switch to move mode—if you move the mouse around now, you can move the point to a different location.

Fill Smart

If you've got two curves overlapping each other and want to fill the area between them, you'd have to go through a whole world of pain to accomplish this in older versions of CorelDraw. Fortunately, you can use CorelDraw X3's



Record TV Programmes With PVR Software

TV on your PC is an easy reality. Quickly get yourself a TV-Tuner—and WinDVR will do the rest

Jayesh Limaye

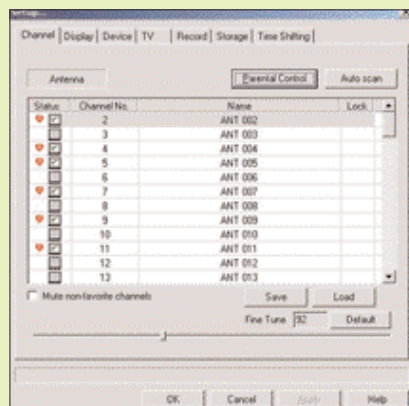
Rewind to a spectacular moment of a Formula 1 race. Record a dramatic climax from your favourite serial (even when you are away from your PC). Pause a movie to answer the doorbell.

Windows XP Media Center, of course, allows you to do these, but the cost of the software can be off-putting. You can achieve Media Center functionality using your existing TV-Tuner—these cost about Rs 1,200 these days—along with a software called InterVideo WinDVR, a PVR (Personal Video Recorder) software. Download and install it from www.intervideo.com/jsp/WinDVR_Profile.jsp. WinDVR costs \$79.95 (about Rs 3,700), but a fully-functional 30-day trial version is available. WinDVR works with most TV-Tuners with WDM drivers.

STEP 1 Setting Up The TV Channels

After installing the software, on the TV panel, select the source as “Antenna” from the available options: Antenna, Composite, and S-Video. You can use the Properties settings to control how WinDVR looks and functions, and configure and customise TV channels in the Channels property page. WinDVR automatically scans your cable or antenna signal for available channels. You can label, identify, and include or exclude channels from the channel surfing list.

The number of channels available will vary depending on the selection made between antenna or cable TV, and the country settings supported by your TV-Tuner. (Different countries

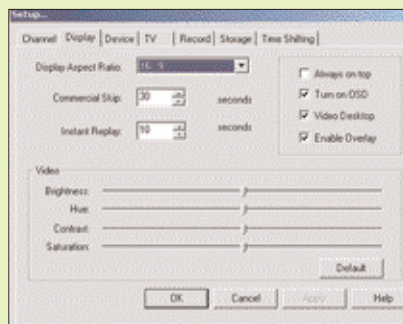


Setting up the channels and fine-tuning them

have different frequency ranges allocated to them for TV / cable transmission.) After the channel scan is done, the available channels are clearly displayed. If you see speckles or if the sound has a noticeable hiss (or is cracked), you can use the Fine Tune tool to slightly change the frequency.

STEP 2 Display Properties

Under “Display Properties”, you’ll find an interesting feature of WinDVR—you can set the TV to play as the Desktop background! It may not be very practical to watch TV with Desktop icons in the foreground, but the idea is cool—and



Setting the brightness, contrast, hue, etc.

it may even be OK for a news programme! Under Display Properties, you can also set the Aspect Ratio (set it to 4:3), Always on Top, Brightness and Contrast, and more.

STEP 3 Record Properties

Under Record Properties, you can configure the audio and video settings for small file size or high video quality. Choose a lower resolution and bitrate for a lower file size (and relatively lower quality)—or choose a higher resolution and bitrate for higher quality playback, with the downside being larger file sizes. You can also choose between the MPEG-1 (VCD quality—which requires less resources)

It's Resource Hungry!

In order to record at the highest video resolution, you need a fast processor (1.5 GHz or above), at least 512 MB of RAM, and a fast (at least 7200 rpm) hard drive. If you intend to capture in MPEG-2 format (DVD quality), you need to make sure you have lots of gigabytes of free space on your hard disk.

and the MPEG-2 (DVD quality—which requires more resources) formats.

STEP 4 Timeshifting Properties

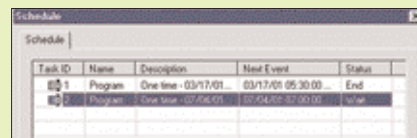
The timeshifting feature allows you to pause, replay, or skip commercials during live TV. Yes, this is possible even with an ordinary TV-Tuner card! You can pause and attend a call while watching a live show, come back and pick up where you left off, or if you wish, you can instantly get back to the live show.

Right-click on the window in which you’re watching TV. In the pop-up menu that appears, select Timeshifting. At any point in Timeshifting, you can use the software’s display controls to pause, fast-forward through ads, or rewind for an instant replay.

In the Timeshifting Properties page, you can set the Timeshifting mode to either Normal or Record mode. In Normal Mode, the Timeshifting feature is used without recording the complete program: a limited part of the program is recorded as a buffer, and you can specify the buffering time. Therefore, you can only rewind a program to a period not exceeding the buffer time. When Record Mode is selected, the recording period of the program is not limited by a buffer time. This mode takes up more system resources, so the system may perform slower during recording and playback. The advantage here is that you can rewind to the point when you started using the Timeshift feature.

Scheduling

Scheduling is a useful PVR feature—WinDVR only makes it more powerful: it displays a viewing reminder, and can record a TV



Set up WinDVR to record a programme anytime!

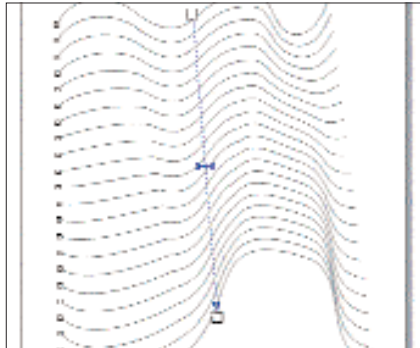
programme from a certain channel at a predetermined time. The schedule can be set for a one-time or a recurring session. ■

jayesh_limaye@thinkdigit.com

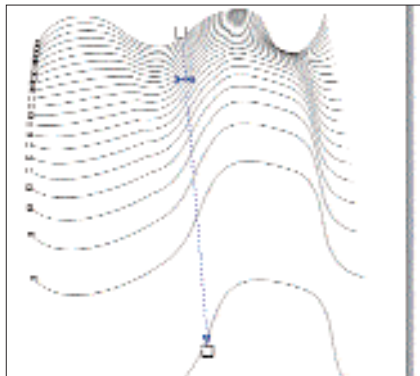
Smart Fill tool to do that for you now. Just click inside any closed area—this could be the intersecting gap between two curves as well—and CorelDraw will create a new object that fits snugly into that space.

Cool Effects Using The Interactive Blend

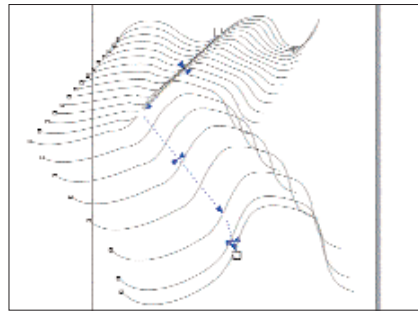
You can add considerable amounts of style to your documents using this simple tool in CorelDraw. Start with any two curves, and select the Interactive Blend tool. Click on the first curve and



Create a straight blend

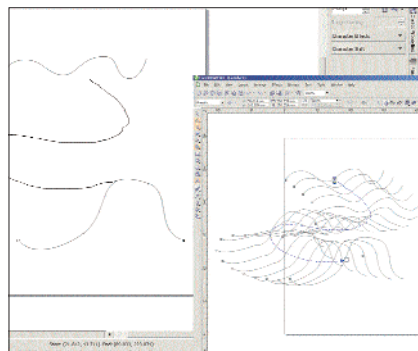


Tweak the density



Change the shape

drag to the second for a smooth morphing effect. To tweak the density of curves along the blend, slide the blue arrows along the line (see screenshot). If you double-click anywhere along the blend line, you can create an intermediate point which you can now use to change the direction of the bend—blend along a number of lines instead of just one.

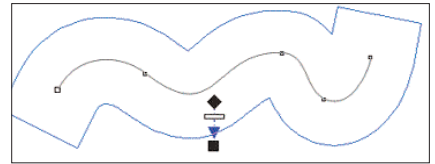


Blend along a freehand path

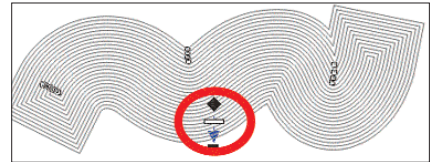
If you want to blend along a random path, hold down [Alt] after you click on the first curve. You can now draw the path along which you want the blend to occur.

Creating Wires And Ropes With The Interactive Contour

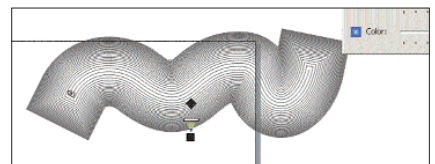
New to CorelDraw X3 is the Interactive Contour tool, which can easily create concentric curves around a central object. To create convincing wires using this tool,



Creating a Contour



Use the handy white slider to adjust the contour levels



Use the Object and Colour Acceleration to finish the effect

start with a single freehand path, select the Interactive Contour tool and click and drag on the path. Set the contour steps to a considerably high number (you can do this either by entering the value manually in the top toolbar or by playing with the white slider on the contour object itself (see screenshot). Now use the Object and Colour Acceleration sliders (see screenshot) to bunch the contour lines towards the outside to create the illusion of viewing a wire or tube from above. ■

Keyboard Shortcuts for CorelDraw X3

Change Case...	[Shift] + [F3]	Changes the case of selected text
Column/Frame Break	[Ctrl] + [Enter]	Column/&Frame Break
Font List	[Ctrl] + [Shift] + [F]	Shows a list of all the available/active fonts
Font Size Decrease	[Ctrl] + [NUMPAD 2]	Decreases font size to previous point size
Font Size Increase	[Ctrl] + [NUMPAD 8]	Increases font size to next point size
Font Size List	[Ctrl] + [Shift] + [P]	Shows a list of all the available/active font sizes
Font Size Next Combo Size	[Ctrl] + [NUMPAD 6]	Increase font size to next setting in Font Size List
Font Size Previous Combo Size	[Ctrl] + [NUMPAD 4]	Decrease font size to previous setting available in the Font Size List
Font Weight List	[Ctrl] + [Shift] + [W]	Shows a list of all the available/active font weights
Force Justify	[Ctrl] + [H]	Force Full Alignment
Full Justify	[Ctrl] + [J]	Full Alignment
HTML Font Size List	[Ctrl] + [Shift] + [H]	Shows a list of all the available/active HTML font sizes
Italic	[Ctrl] + [I]	Changes the style of text to italic
Left	[Ctrl] + [L]	Left Alignment
Move Down 1 Frame	[Page Down]	Moves the text caret down 1 frame
Move Down 1 Line	[Down Arrow]	Moves the text caret down 1 line
Move Down 1 Paragraph	[Ctrl] + [Down Arrow]	Moves the text caret down 1 paragraph
Move Left 1 Character	[Left Arrow]	Moves the text caret left 1 character
Move Left 1 Word	[Ctrl] + [Left Arrow]	Moves the text caret left 1 word

WARCRAFT 3

When Blizzard, one of the most revered names in the RTS genre, debuted *Warcraft 3* in 2002, and followed up with the expansion pack *The Frozen Throne (TFT)* a year later, thousands of players were bitten by the *Warcraft* bug (they still are)! Unlike other RTSes, *WC3* is all about attacking and attacking soon, while building up. Micro-management is the key here, and most battles don't last more than 15 minutes, and are finished with Tier 1 units—with a few Tier 2s thrown in, and a level 2 (or 3) hero.

Micro and speed being tantamount, let's look at some of the most important strategies in the game. Bundled in these tips are some common-to-all-races shortcuts keys as well.

Use the [Shift] key while assigning workers (peons too) to build up. You can queue up multiple buildings this way to be built by a single worker. Never keep builder units idle!

Don't hoard gold! If, in the first five minutes of the game, you have more than 350 gold, you are not rich—you are *slow*! Tech up the research tree, build more buildings and units. You aren't earning any interest on all that yellow!

Attack and attack early! We can't stress on this enough. Don't let your opponent build up, research up, and for God's sake, don't let him expand! Keep harassing his base, all the while bolstering your forces, and teching up!

Once you have your first hero, rally your troops to him by setting his portrait as a rally point (by right-clicking on it), for all troop production buildings. This way any newly created units will automatically take off after your hero, irrespective of where he is



Plan your attack, summon all you can!

on the map. This really saves a lot of time. Even your second (and third) hero should be rallied in this way.

As Human you can use peasants to creep close to your base. Just convert some of them to militia (keep some at resources too), and use the rest. Your hero will level up faster, simply because he can attack earlier. Use on green-coloured creep camps only!

Build orders are very important, but can change from opponent to opponent. Here's a sample—as soon as the game starts, put four workers on gold, queue a sixth worker, and put the fifth on your altar (hero production building). As soon as the second worker appears, put him on your primary troop production.

At the same time, remove one of the guys tasked on gold, and use him to build a farm (or your race equivalent structure), the seventh worker should be put on wood, while the fifth worker who should have finished the altar—task him back to the gold mine. You now have five gold miners, and the rest of your workforce should either build or focus on wood.

When you attack, make sure to pull back units that are wounded, employ hit and run tactics, and you can keep a couple of powerful summoned units (if your hero is a summoner) just outside the enemy base. This way, while retreating, you get some free hits in case any enemies follow you.

Even when you must pull back, only do so for a short distance, regroup, and focus again. Never pull back entirely from an enemy base.

Focus-fire works wonders with ranged damage units, like riflemen, archers etc.—but do not use focus-fire when attacking with melee. Simply attack ground: focus firing will waste precious time, as your melee units will



Build clusters of buildings for your main base don't fan out



Use hero powers well! Flame Strike being judiciously used



Use powers on buildings with clusters of enemies close by for greater effect



Kill off weak enemies first, focus fire at work here

take damage, just getting into position to attack the unit you focused on.

Don't lose units, and certainly don't lose heroes! Each hero lost is like minus 1000 gold, not to mention you stand a good chance of losing the game!

If a unit—or even a hero—is perilously close to death, and you're still being attacked (or cannot heal the unit), use your own units to finish the job. Deny enemy heroes valuable experience points this way.

There you have it! All the basics you need to successfully see you through *Warcraft 3* multiplayer. It's highly addictive though, so do take a look at the time (your real-world clock) every once in awhile! ■

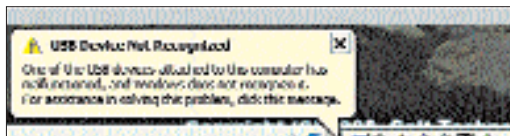
Q&A

Your Questions, Our Answers

Stretching It Too Far

Q I have a Creative Webcam. The cable wasn't long enough, so I bought a 5-metre USB-to-USB extension cable. Now, when I connect the Webcam using the cable, a message appears: "USB Device Not Recognized". When I connect the Webcam directly, it works fine.

Bhupinder Singh



An unfortunate USB device not recognised

A Because of latency issues, a USB cable can only be 5 metres long. If you need to extend the length of the cable, you need a USB repeaters or USB relays to reduce signal loss.

Go Away!

Q I have Windows XP, and I installed Windows 98 from the DOS prompt. It started appearing as the first item in the OS choice menu. Later, I deleted all the Windows 98 files because I didn't want it any more, but it still appears in the boot menu. How can I get rid of it?

Via e-mail

A The items that appear in the OS choice menu at boot time are stored in a file—Boot.ini. You can edit this file to remove the Windows 98 menu item. Open *Control Panel > System*. Click on *Advanced*, and under "Startup and Recovery", click *Settings*. In the window that opens, you can change the default OS by choosing Windows XP from the drop-down box. If you want to stop the item from appearing, you need to click *Edit*. The *Boot.ini* file will open in *Notepad*. Scroll down to the [boot loader] section, which will look like this:

```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WI
NDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS=
"Windows 98" /noexecute=optin /fastdetect
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS=
"Microsoft Windows XP Professional" /noexe-
cute=optin /fastdetect
```

Under the [boot loader] section, change the line "default=multi(0)disk(0)rdisk(0)partition(2)\WI NDOWS" to "default=multi(0)disk(0)rdisk(0)partition(1)\WI NDOWS".

Delete the line "multi(0)disk(0)rdisk(0)partition(2)\WINDOWS= "Windows 98" /noexecute=optin /fastdetect"

Save the file and you're done. The next time you boot your computer, you will only see the "Microsoft Windows XP Professional" option.

We're Sorry To Inform You That...

Q I have a P4 2.8 GHz (Northwood, Socket 478) on an Intel D865PERL board. My processor's fan failed. While pulling out the heat sink / fan, the thermal compound (Intel-shipped) between the heat sink and the processor was so adhesive that the CPU's thermal spreader got plucked out, flushing the liquid compound all over the CPU area of the board. (The thermal spreader is a metallic plate over the CPU's core that's hollow, filled with liquid thermal compound.)

I understand that if I just replace the plate, it would create an air gap between the core and the plate. If I use the CPU in that condition, it would toast the core. What do I do? Luckily, my board survived the spill.

Tarun Raju

A While you might have been lucky that the motherboard survived the spill, we have to say that the same is not the case with your processor. Because the CPU's thermal spreader is considered a part of the processor, its getting dislodged from the processor body means that the processor has been damaged—and this damage is not repairable. Since this is physical damage, you cannot avail of the warranty even if the processor is under one.

Done In A Jiffy!

Q Whenever I schedule a disk check on Windows XP, the following error comes up at the next reboot:

```
"Disk checkup
Checking file system on C:
The type of the file system is NTFS
Cannot open volume for Direct Access
Windows has finished checking the disk"
```

All other partitions are checked normally except the C: partition. I log into Windows as Administrator.

Sandeep Jain

A The problem can be resolved by installing the latest Service Pack and hotfixes for Windows XP. According to Microsoft, this problem has been resolved in Service Pack 2.

Call A Rose By Any Other Name...

Q I want to know what difference setting a hard disk or an optical drive as Master or Slave would make. How can I make a drive Primary or Slave? What are the advantages and disadvantages of both?

Manish Sihotra

A There is no functional difference between Primary Master, Primary Slave, Secondary Master and Secondary Slave. These designations only differentiate between the different devices. Your primary hard disk—the one with your OS—can be the secondary slave, if you so wish.

An IDE device, when connected to the Primary IDE port (via an IDE cable connected to the port), becomes a Primary IDE device. An IDE hard drive or optical drive can be set to Master or Slave by changing the connection of the jumper—a small plastic plug with metal sleeves that forms a circuit between a pair of pins.

The jumper settings of a drive can be accessed just beside the IDE data cable connector. The hard disk or optical drive will have the jumper settings mentioned on the label—what setting will set the drive to master, slave, and more. Jumpers are tiny, and you might need a pair of tweezers to handle them.

A BI-OS Conflict

Q I have an NForce4 motherboard with 512 MB of DDR RAM. I want to install Windows XP on it, but I get error 0x0000007B during installation. The hard drive is detected by the BIOS but not by the Windows XP installer CD. I have tried replacing the 250 GB SATA hard drive with my old 120 GB SATA drive and even replaced the RAM, but the problem persists.

Manish Paswan

A The 0x00007B error is normally the “inaccessible_boot_device” error where windows can’t find the partition that has your OS. The most common reason for this is that you may have configured your SATA hard drive in the RAID configuration in the BIOS. You may need to check for this in the BIOS and set the hard drive back to legacy IDE mode. But if you intend to use it in RAID configuration, you can still install Windows XP. You need to keep the RAID driver floppy disk ready before starting the installation. If you don’t have it, you can create one using the driver CD that came with the motherboard.

After the Windows XP bootable CD boots and the installation begins, press [F6]. You will be prompted to insert the driver disk; use the RAID driver disk you created. Select the correct driver from the list and continue. XP shouldn’t have any problems installing.

Got Java?

Q I have a Compaq Presario 4010 running Window 98, with 128 MB of RAM and a Celeron at 367 MHz. While trying to run the “Quick Restore/Custom Restore” CD, I get a message: “Applet sqcd not initied.” Pressing the restore button gives an “Error on page” message.

B Mazumdar

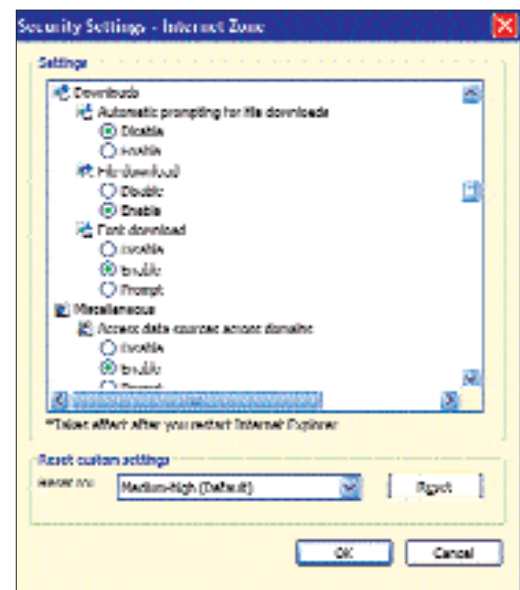
A The “Applet notinitied” error occurs when the Java Virtual Machine is either not installed or is corrupt/damaged. You will need to download and install the JRE from the Sun Java Web site at <http://java.com/getjava/index.jsp> or by visiting <http://java-virtual-machine.net/download.html>.

Blame It On IE

Q I have Windows XP SP2. I am not able to download any files. When I try to download a file, I get an error (*as shown below*). I am using Norton Internet Security 2005; I contacted Symantec Corp. and they just said something to the effect that it wasn’t their fault. What do I do?

Harris

A Your Internet Security settings are set to prevent file downloads. This probably happened accidentally. You can change this setting: open **Control Panel > Internet Settings**. Go to the Security tab and click “Custom Level”. In the Settings list, look for “Downloads”, and under this, you will see “File Download”. Click on the radio button next to Enable and click on OK twice. The new settings will take effect immediately, and you’ll be able to download.



Set the download settings in the IE Security Settings tab

Pausable?

Q I saw an ad for a Pentium 4 system with Window XP Media Center Edition, which said you could pause Live TV. I want to know whether this is possible, and how?

Rajesh Kumar

A Windows XP Media Center Edition, as well as many of the PVR (Personal Video Recorder) software available, have a feature called timeshift. Using the timeshift feature, it is possible to pause, rewind or even skip parts of a live telecast. In the timeshift mode of operation, the PC records the telecast at the same time as it displays it on the Desktop. When the Pause button on the Media Center remote is pressed, the recording continues, but the display on the Desktop is frozen until the Pause button is pressed again. Playback resumes from the point that it was paused, which can happen because the telecast that was recorded during the pause interval is maintained as a buffer. Rest assured—the advertisement is not misleading!

Sync Files Across Drives Or Computers

Ever felt you can do better than the unrelenting remixes streaming from your radio? An audio editing tool and some creativity is just what you need to make your own mixes!

Kailas Shastry

Most of us have more data than we can mentally keep track of. Some of this is important enough to warrant a regular backup. That apart, you may also need to work on some files at both home and office, for example—and therefore need to keep them in sync, which you can do using backup and syncing software. Your backup media can be a pen drive or an external hard drive so you can carry data around. Let's take a look at backing up and synchronising using a free, feature-rich software called SyncBack.

What you need

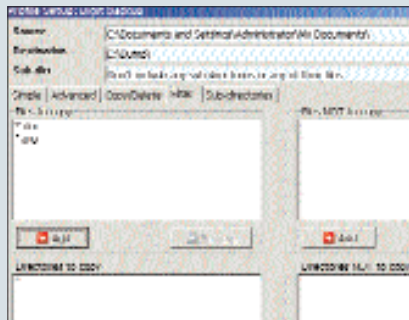
Your backup media could be anything—let's use an external hard drive—and the Syncback software, which you can download from www.2brightsparks.com/assets/software/SyncBack_Setup.zip. Extract the file and run `SyncBack_Setup.exe` to install Syncback.

Sync Vs. Backup

A “backup” just creates a copy of the source directory in a destination directory, irrespective of the time the files were created. A sync (synchronisation) process, on the other hand, can compare the source and destination files and update either one of them with the latest copy. Say you take a backup, then go home and work on some files on the backup drive. When you return to work and sync your data, your work files will be updated with the changes you made at home. The sync process is obviously the more intelligent of the two: it's the smart way of doing things. Using synchronisation, you can ensure that your data is always up to date in every place—with all changes being saved on your home computer, office computer, and also your backup drive.

Getting Started

When you open SyncBack for the first time, you will be prompted to create a profile for either synchronising or backing up. You can select between the backup and synchronise settings according to your preference—clicking on any one option will



Choose your backup options

give you a description at the bottom of the window. Choose either of the two—depending on whether you just need to back up or also need to sync—and continue.

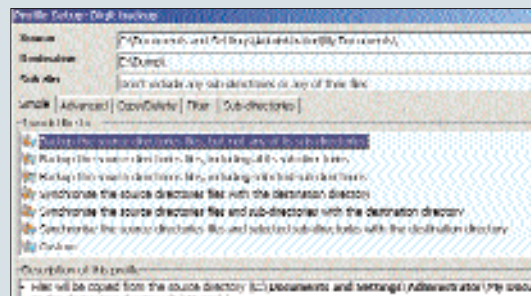
You can set a profile with “rules” such that the copy happens only if the files are modified or happen irrespective of modified date or just update missing files in either or both folder.

Next, you select the source folders (the folders you want to back up or synchronise) and the destination folder (where the backup will be stored).

Using The Sync Feature

For the task at hand, which is to update the source and destination directories such that work done on two different computers is “in sync,” you'll need to choose the option “Synchronise source directories files and sub directories with the destination directory”.

Thus, if you have file1 and file2 in the source directory, and your destination directory is empty, the files will be copied to your external hard disk. Now, let's say you carry this external drive to another machine and add file3 and file4, and modify file2. When you sync again, the contents of the source and



Every backup action is clearly explained

destination are different, so file3 and file4 will be copied to the source. As regards file2, you can choose whether or not it is copied to the source by setting the options under “Advanced”. There are many options here, but they are all self-explanatory.

Filtering

If you want only certain file types—or files with a particular name—to be copied, you can set this in the options under the Filters tab. For example, if you only want to copy .doc and .jpg files, you can specify these in “Files to copy”, and if you do *not* want some file types copied, then set them under “Files NOT to copy”.

Doing A Test Run

If you are unsure of the results that your settings will produce, you can simulate a run wherein the files will not be actually moved, but where you get a report of what would have happened had the task been executed. You can view the results and, if you're satisfied, “Run” the operation.

The Expert Mode

At the bottom of the SyncBack window is a button called “Expert”. When you click on this, an array of tabs appear, which give you more features to fine-tune your backup process. For example, you can cram your backup into a Zip file to save space, or have SyncBack e-mail you a report after an operation, or even have your backup done on an FTP site. For most people, the “Easy” mode is sufficient.

Restoring Data

In a situation where you've backed up something and lose the original, no fear: just click on the Restore button in the SyncBack window to move data from the destination to the source. If files with the same name exist in the two folders, the copying of those files will be in accordance with the setting you chose while backing up. ■

readersletters@
thinkdigit.com



Read The Fine Print

Q My PC configuration is a Pentium 4 at 3 GHz, an original Intel D915GAV motherboard with a Intel(R) 82915G/GV/910GL Express Chipset Family, a display adapter with 128 MB of onboard memory, and 512 MB of DDR 333 MHz RAM with DirectX 9.0c installed. The *Age of Empires 3* Demo runs fine with all the advanced features turned off, but in the later stages of the game, I experience some problems with the smoothness of play. I intend to buy the game, and I want it to run smoothly on my PC. Are there any changes I can make so I don't experience a problem?

Jatin Bidaye

A Your system configuration meets the minimum system requirements of *Age of Empires 3*, so it is able to run on your computer. However, you should keep in mind that the "minimum system configuration" the game developer states is the *absolute minimum* system specifications at which the game can run.

You can't expect it to run in its full glory on such a system—even if certain levels of the game run satisfactorily, at a level with complex details and higher AI requirements, the game might stutter.

Shadows Of The Past

Q I was addicted to porn once upon a time, and that reflects in my browser's Google toolbar: if I want to do a search on "systems," as soon as I type the "s", it brings up a drop-down list of options that indicate objectionable content, which, of course, I'd typed in earlier. What needs to be done to prevent the unwanted lists from coming up?

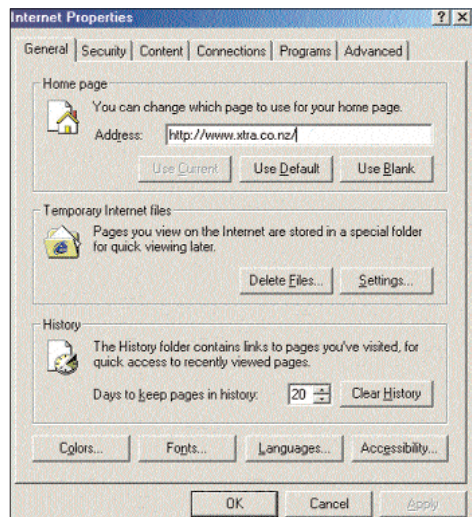
Ajay CK

A We assume you're using IE, since you haven't mentioned what browser you're using. Get rid of the drop-down history in the following way: go to **Control Panel > Internet Options**. In the General tab, under Temporary Internet Files, click on the button that says Delete Files. In the window that pops up, check the box that says "Delete all offline content" and click OK. Further down, you will see a History section. Click on the Clear History button to clear the History folder, which contains links to pages you've visited.

NetNone?

Q I have a dial-up Internet connection from BSNL called NetOne. I use a 56 Kbps internal modem. When I connect, the connection speed shows up as "connected at 40 Kbps," but downloads are very slow. Even when I use a download accelerator such as DAP, I get ridiculously slow download speeds—2 to 3 KBps.

Bipin Thite



The "General" tab under Internet Properties

Get Help Now!

E-mail us your computing problems along with your contact details and complete system configuration to sos@jasubhai.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!

A The connection speed shown is the speed at which the handshake between the modem and the ISP's server has been negotiated. This depends on a variety of factors such as the quality of the telephone line, whether there is noise in the signal, the quality of the modem, and other factors. You might need to check your modem settings, such as the initialisation string, which can be set in Control Panel > Phone and Modem Options. Try to lower the baud rate of the modem to, say, 33.6 kbps and then try to connect. If the modem connects, there is certainly a noise problem with your telephone line: you might need to contact your telephone company for a solution. You could also try plugging the modem into a different PCI slot.

I Screwed Up...

Q I have an ASUS motherboard. I used the ASUS BIOS update utility to download and update my BIOS to the latest version. I could only see a blank screen after I rebooted. The fans spin, and there is no other activity. My motherboard came with the CrashFree BIOS 2 facility. How I can use it to revive the motherboard?

Navraj Singh

A To restore your BIOS using CrashFree BIOS 2, all you need to do is boot the computer using the ASUS support CD. The BIOS will be recovered automatically. But if your system doesn't even reach the stage where it detects the CD as the boot device, your only option is to get the BIOS chip replaced, or re-programmed by a technician.

Perfect Password Protection

Q Is there a way to lock a folder by assigning a password so that the folder will not be accessible without a password even in Windows XP's Safe Mode?

Aadesh Patil

A There are quite a few programs that let you do this. A good program to password-protect your files and folders is Folder Lock, which you can download from www.newsoftwares.net/folderlock/ or Hide Folders XP from www.snapfiles.com/get/hidefoldersxp.html. These programs can hide your files as well as your folders, and it can do this for files on removable drives as well.

The Penny-Pincher

You want to buy a PC. Naturally, you want to spend as little as possible. Agent 001 tells you how

Month after month I receive mails asking about optimal PC configurations. That “optimal” might as well read “cheapest.” The performance crown might be high on Intel’s and AMD’s wish-lists, but the ground reality is quite different. Cheap sells.

A few years ago, Rs 25,000 used to be the price for “a very affordable PC”; today, that figure is something like Rs 10,000. I often come across ads offering PCs at around Rs 10K. What kind of components do these PCs come with?

It’s not possible for me to go about checking the hardware components that go into each and every brand’s sub-10K offerings—besides, there’s often fine print involved in those cases—so I decided to do my own investigations and assemble the cheapest PC remembering not to compromise too much on the quality of components. Everyone wants to strike a deal and get the cheapest possible rates; however, it shouldn’t come at the expense of performance. In other words, “the cheapest PC” should not be defined by cost alone, because at the end of the day it’s a utility device—something you’ll be spending time with every day. Assigning some weightage to performance is therefore a must.

“Performance” by itself is a vague term and has different connotations for different people. So instead of giving you a magic configuration—a one-stop solution for everything—I am offering two different solutions, addressing two different performance levels.

Configuration 1

You want: A PC for basic Internet usage, word processing, possibly for accounting, inventory management, or perhaps for programming...

My suggestion: Such a PC will be based on the least expensive hardware available. Prices will vary, but not by much. If you want an Intel solution, opt for a Celeron 2.1 GHz with an ASRock 845 chipset-based motherboard; this combo will set you back by another Rs 1,000.

What to expect: Since this is based on a VIA chipset, graphics will be a sore point, and most games won’t run—but routine apps won’t suffer. This machine will be a great beginner’s PC; for example, if you want to introduce your kids to the world of computers without hurting your wallet, this is what the doctor ordered.

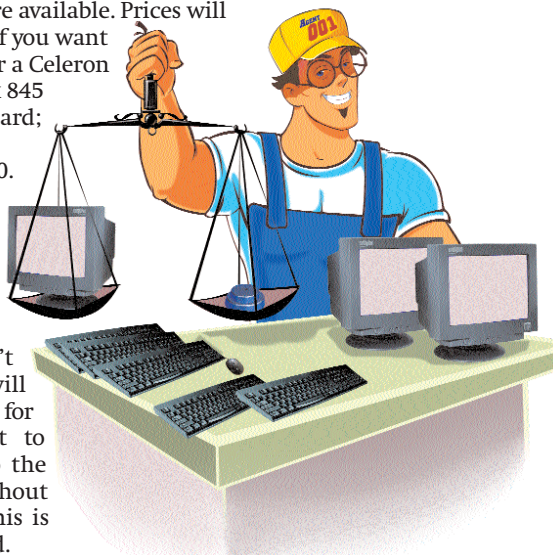


Illustration Pradip Ingale

Configuration 1: A basic computer for general use		
Component	Brand / Specifications	Cost (Rs)
Processor + Motherboard	AMD Sempron 2500+ An MSI or Gigabyte board based on a VIA chipset	4,500 (for the combo)
RAM	Transcend 256 MB DDR 400	1,100
Hard Drive	Seagate / Samsung / Hitachi / WD 80 GB (give or take Rs 150 here)	2,350
Monitor	Samsung / LG 15-inch CRT	3,950
Optical Drive	LG combo drive	1,450
Keyboard and Mouse	Logitech (ball mouse)	500
Cabinet	A cabinet from Frontech, Kobian, Perx, or other such brands, with a 350-watt power supply	1,000
Speakers	Stereo desktop speakers from any Taiwanese / Chinese brand	300
Total		15,500

Configuration 2

You want: A reasonably powerful, upgradeable, multimedia PC that’s not too hard on the pocket.

My Suggestion: This configuration is based around an Intel dual-core and a 945 chipset motherboard. The 945 chipset supports Vista, thus offering headroom for upgrades. It has onboard graphics, but can be upgraded for better performance using the PCIe slot. The PC still hovers round the 25K sweet spot.

What to expect: Since it’s based on reasonably good onboard hardware, the PC will allow you to play recent games at low resolutions and settings. With 512 MB of memory, most multimedia applications won’t bog the system down. The 17-inch monitor ensures a good Internet experience.

You can, of course, tinker around with these configurations, and if you’re wondering about a particular point, just drop in a mail! ■

Configuration 2: A multimedia computer		
Component	Brand / Specifications	Cost (Rs)
Processor	Intel Pentium D 805	5,750
Motherboard	Intel Original 945GNTL	6,200
RAM	Transcend 512 MB DDR2 667 MHz	2,300
Hard Drive	Seagate / Samsung / Hitachi / WD 80 GB (give or take Rs 150 here)	2,350
Monitor	Samsung / LG 17-inch CRT	5,500
Optical Drive	LG combo drive	1,450
Keyboard and Mouse	Logitech (optical mouse)	800
Cabinet	Any decent cabinet with a 400-watt power supply	1,500
Speakers	Creative stereo desktop speakers	500
Total		26,350

Want more of Agent 001? Turn over to read his answers to your buying questions

No Room At The Top

Q I have an Acer TravelMate 2412NLCi laptop with an Intel Celeron 1.4 GHz processor, a 40 GB hard disk, 256 MB of RAM, and a Reliance data card for Internet connection. I use my laptop to work on SQL and .NET applications. My problem is that the notebook is slow; I want your opinion on upgrading it. I would also like to play games on the laptop.

Yogendra Dubey

A Your laptop is underpowered for any kind of gaming or high-end computing. Also, Intel's Celeron processor isn't good at number crunching compared to the Pentium M processor, so applications such as games, mathematical analysis software, etc. will take a performance hit. In addition, Celeron processors don't support multimedia extensions such as SSE3, so they can't take advantage of the optimisation codes utilised by many multimedia applications.

You can hardly upgrade this laptop; the only thing you probably can is the memory. SQL is a memory-intensive application, and will show better performance with an increase in memory. Don't expect any miracles, however.

Can You Go Better?

Q For my new cell phone, I have identified the Sony Ericsson P990i—scheduled to launch this summer—and the O2 Atom XDA as the best for me. Please let me know about phones with similar or better features in the same price range.

Prateek Monga

A I'm assuming you want to buy one of these phones for typical business usage and not for things that the enthusiast would do—such as installing lots of applications, creating ringtones, and so on. Both the phones you've mentioned are targeted at business users. We at the *Digit* Test Centre haven't yet reviewed the P990i, and hence can't give you a clear verdict. However, based on our experience with the Sony Ericsson P800 and P910, we can say one thing: these devices tend to be bulky. As far as the Atom O2 is concerned, it is a typical Windows mobile device—it does crash and hang. If you can overlook that, it's a decent device, though it's expensive.

Take a look at Palm's Treo 650—I consider it the best amongst business phones. There are some little niggles that can be overlooked. Nokia's E61 is an excellent business phone for the price; however, do give the QWERTY keyboard a try before taking the plunge. The E61 is available for around Rs 19,000, and the Treo 650 is around Rs 25,000.

For A Few MB More

Q I have a Pentium 4 3.0 GHz on an Intel 915 GV/GL with 256 MB of DDR2 400 MHz RAM; I want to upgrade to 512 MB. What is the frequency of the module I'll require? Can you suggest a brand, and give me the approximate price for 256 MB?

Sujay Kumar



Your question has the answer! Your system has a DDR2 400 MHz memory module, so to upgrade it to 512 MB, you need either a 256 MB DDR2 400 MHz module, or you can get yourself a single 512 MB module and get some cash off your old stick. I'd suggest you get a 256 MB module—a Transcend, for Rs 1,100—that way, you can configure the motherboard to run in dual-channel mode.

All(Most) Worked Out

Q I want to buy a PC for gaming, entertainment and educational purposes. I have decided the configuration except for the motherboard: an Intel Pentium 4 Processor 630, 512 MB DDR RAM, 160 GB SATA HDD, DVD-Writer, NVIDIA GeForce 6200 TC graphics card, and driving wheel. What is your opinion on this configuration? I have allocated Rs 9,500 for the motherboard. Can you suggest a good one?

Tushar



I think you should reconsider your configuration. Instead of the Pentium 4 630, which is a single-core processor, I'd suggest a dual-core processor, that is, the Pentium D. The cheapest dual-core from Intel is the D805 (2.66 GHz), available for as low as Rs 5,750—quite affordable.

As far as the motherboard is concerned, opt for one based on Intel's newly-launched P965 chipset. This way you keep an affordable upgrade path. If you want to upgrade to Intel's new Conroe processor, a P965 motherboard will natively support it, and since the D805 is relatively cheap, upgrading won't hurt too much. MSI and Gigabyte have motherboards based on the P965 chipset.

On the graphics front, opt for a 7300GS/GT-based card over a 6200 TC-based one. You can get a decent 7300GS-based card for around Rs 7,000 (check the *Bazaar* section in this issue for more details).

I'm Going Digital

Q I will be buying a digital camera sometime soon, and have a budget of Rs 15,000 or less. Could you suggest me some good models and also mention their exact price? I also want to know if there is a good gaming laptop for less than Rs 70,000.

Dhruv



If your budget can go up to Rs 15,000, we don't know what exactly you mean! A basic entry-level digicam from a reputed brand will set you back by about Rs 8,000. The Canon A420 and the Nikon Coolpix 3100 are a couple of the entry-level models you can look at. If you're talking in the Rs 13,000 range, you can get a very good digital camera from Canon or Sony. The Canon PowerShot A700 and the Sony Cybershot DSC-P200 are two good models.

Coming to gaming laptops, I don't like the idea of using laptops for gaming, for ergonomic reasons. For Rs 70,000, you can get yourself a great desktop gaming machine—forget about laptops! ■



Ask Away!

Want a tech product, but don't know how to go about buying it? E-mail agent001@thinkdigit.com with your complete contact details, and he might answer them here! Please note that Agent001 only answers purchase-related questions in this space.



108 The Net Threat



112 Do You Need A Web Site?

Tech Careers

Upwardly Mobile

Are you up to creating the apps that will enhance increasingly smart phones?

Kailas Shastry

Operating systems and installable software are no longer associated with just PCs: mobile phones have very rapidly evolved to being computers on the go, with the ability to do almost everything a PC can—Internet browsing, word processing, multimedia, games, and more. With operators offering more value-added services such as downloadable games, the demand for mobile applications is growing.

To cater to this demand, many large software services companies have a division dedicated to the development of applications and / or games for the mobile platform. Then there are smaller game development companies that have a division working on games for mobiles (or wireless devices as they are called). That's not all—online entertainment/content providers are also looking at reaching out to a wider audience through mobile phones.

All these factors have taken mobile application development from infancy to adulthood with an ample boost of hormones.

The Mobile Vs. The PC Platforms

At this point, it is natural to wonder why mobile application development is viewed differently from development for the PC platform—aren't they the same, or at least similar? Well, in both cases, what's involved is coding, testing, debugging, optimising and such. You need analytical skills and in-depth knowledge of the development tool and the target platform. When it comes to mobile devices, however, there are certain constraints that make writing the software more challenging.

Says Alok Sood, founder and COO of Jivanta, an outsourced game development services company, "Mobile games impose a lot of constraints—for example, limited memory and storage space, limited processing power, limited controls, small display sizes, poor resolution, and so on." Vijay Jain, CEO and CTO of Astute Systems Technology, a developer and publisher of mobile



In A Nutshell

Most companies currently look for candidates with a B.E. or B.Tech., and then train them according to their needs. In most cases, the training comprises one or more of the following: C++, J2ME, Flash, BREW, programming for Palm OS, Symbian OS, and even VC++. For game development, an aptitude for mathematics and prior work experience in multimedia is advantageous.

Starting salaries are more or less equal to those in any other software stream. In an established company it can be upwards of Rs 15,000, while in smaller companies, it is around Rs 10,000.

Besides programmers, the industry also looks out for multimedia designers, and in the case of games, script writers.

applications, says, "Only about 20 per cent of the Java APIs are available on the J2ME (Java 2 Micro Edition), which is for mobile development."

Raju Patil, head of mobile games, Dhruva Interactive, agrees. He goes on to say that game development in particular "involves cohesive team work involving designers, artists, programmers, testers, sound engineers and, last but not least, the producer who manages the overall development."

Skill Sets And Aptitudes

So what does it take to be a mobile application developer?

Major programming platforms such as Java and Flash come with their mobile editions—J2ME and Flash LITE respectively. Hence knowledge of Java, for instance, will help a fresher get familiar with the mobile version. But as one progresses to advanced levels, the advantage of knowledge of the PC version diminishes, and it takes more or less the same effort to specialise later on. However, all the companies we spoke to agreed that a person with a B.E. or B.Tech. background is easier to train than others, owing to their strong fundamentals.

Most companies look for candidates with a B.E. or B.Tech., preferably in electronics. As Dr Srinivas R Kandula, director, HR, Sasken Communication Technology Ltd, says, "We hire only electronics engineers, or in rare cases, MCAs. A certification in Embedded Systems would give candidates an edge over the others". For mobile game development, there are two other desirables. In the words of Jain, "A sound knowledge of mathematics is essential—to code AI, for instance—while a multimedia background gives an edge over other candidates."

While most companies look specifically for engineering graduates, they may be forced to relax this rule when the demand for manpower increases further. Of course, candidates will need to have some prior knowledge of the platforms they will be working on, and may even be required to initially settle for a lower pay package. One can take up courses in C++, Flash (scripting), BREW, and J2ME. Of these, C++ is something one needs to know, no matter what software development he is interested in. Learning Flash LITE or J2ME will invariably give you the basics of the main platforms—Flash and Java respectively.

Of these, Java seems the hot favourite. Avers Adithyaa Srikanth, Director, Krish Infotek, a Web and mobile game developer, "Java is the most

popular choice for game development. Java, or the J2ME platform to be precise, is identified as the most convenient for developing mobile games."

Once candidates are selected by a company, they are required to undergo training like in any other software field, where they are taught the specific development tools they will be using. The training period can vary depending on the company and the candidate's background. Sasken has a three-month training, after which a further three-month period is spent on getting acquainted with the works on a live project. Sood, however, feels the training period can be as short as a month for someone who has earlier worked in development, such as with Java.

Benefits, Growth, And The Future

There is a growing interest amongst programmers to specialise in the mobile platform—some developers in large software companies are requesting internal transfers to the divisions working on mobile platforms. They realise that their skill sets will be in even greater demand in a couple of years' time, and also that the job is more challenging. Initially, the pay scale is about the same as that of any other entry-level software engineer; it is after about two years' time that the remuneration will exceed that of developers on the PC platform. The designations here are, however, similar to those in the rest of the software field—a Junior Programmer progressing to a Programmer, Senior Programmer, Team Leader, Project Manager, Architect, Chief Architect...

Raghu, a Java professional from Bangalore, feels, "There is more excitement in writing applications for wireless devices than for a full-fledged PC platform. Maybe this is because the stream is relatively new, or because we have to work so much on optimisation for various devices with so many constraints. Besides, as one grows, the money is better!"

In an established company, salaries for beginners hover around Rs 15,000, and at the end of five years, go up to as high as Rs 60,000. There are several start-ups where you can expect around Rs 10,000, but as in any start-up or small company, the learning and growth curve is steeper. These salary figures are only indicative, and depend on individual performance—and, of course, the company.

What is the future for this stream of software development? Will it grow into a separate vertical, or will it eventually merge into the sea of "software development" that subsumes all kinds of software?

Srinivas Rao of Sasken avers that with the boom in the telecom sector, there will soon be a further need for professionals to program mobile applications. According to a research by In-Stat/MDR, the Indian mobile gaming market is projected to grow to \$336 million by 2009. Another study indicates that the mobile gaming market could expand by as much as 700 per cent by 2010 (as compared to December 2005)

We need only look around us—many of us now use an application or value-added service on our mobile phones that we didn't have even a couple of years ago. This field is here to stay. ■

readersletters@thinkdigit.com

The mobile gaming market could expand by as much as 700 per cent by 2010 as compared to December 2005

The Net Threat

Everyone gets online from their offices today, but doing so carelessly could cost your business some serious money

Robert Sovereign-Smith

In a recent survey of a small number of people, our very own Agent 001 uncovered an appalling truth: many people access the Net at work for just the things they do at home! Read more about the fun stuff people do with any available bandwidth in the *Digital Leisure* section of this issue. What's dangerous is that they could be doing this in your office. Apart from the legal ramifications, your security, too, might be unwittingly compromised by an employee who doesn't understand the consequences of his actions. The onus is therefore on the company to inform employees about how the Net should be used at work—and possibly even monitor their actions.

Most of your employees are getting online, checking e-mail, chatting, surfing, Googling, and playing online games—unless you've specifically blocked access. With all this Internet activity going on, you have to think about the threats posed by hackers, crackers, phishers, and the other "ers" out there. Every second day there's a new exploit, threat, worm and/or virus detected, which puts your data at risk. Now, the very people you employ could unwittingly turn out to be threats to your company—if they're oblivious to the dangers that Internet access brings with it.

Human Engineering

This is a term used to refer to the ploys used by attackers to fool people out of money or data. With Internet banking and a host of other online services being offered by banks, phishing is on

the rise. From eBay clones to banking site rip-offs, there are thousands of sites that claim to be what they're not. Advancements in Web coding means that a phisher can even hide the address bar of his site, thus making a user believe they're really at a bank site.

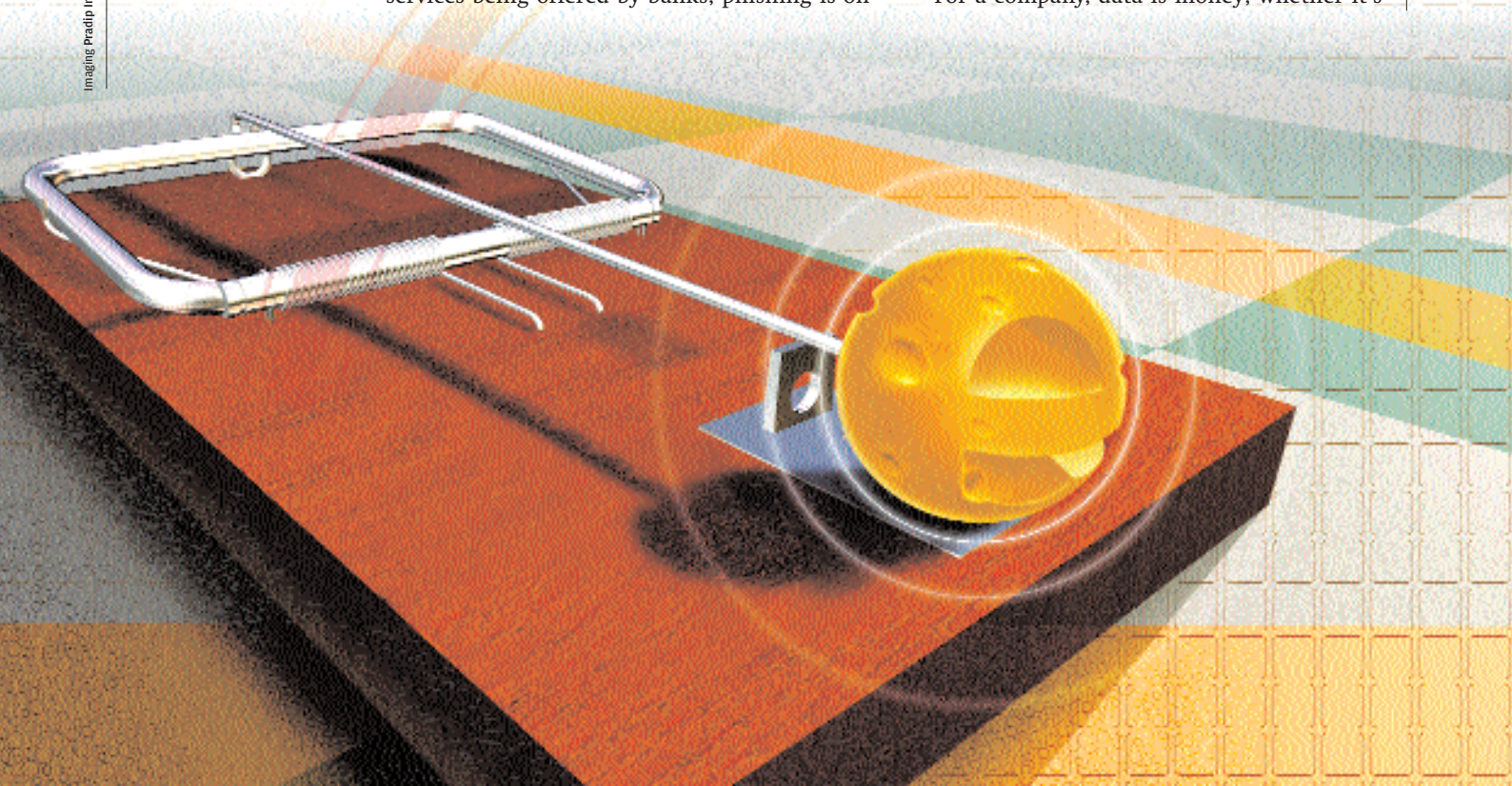
Most phishing attacks come via e-mail, where a user is asked to click on a disguised link, and then update some information. Now if one of these users happens to be an accountant or someone with access to your company bank account, you could be in serious trouble. It is of utmost importance that you educate your employees about the phishing threat.

One fix is to make all your employees see their mails in text format, in which case the problem of disguised links is eliminated. If Outlook is the e-mail client you use, go to **Tools > Options**, and under the e-mail header, click on the "E-mail Options" button. Here, check "Read all standard mail in plain text", and then check the "Read all digitally signed mail in plain text" box. Even if text in an e-mail asks to copy and paste a link into a browser, your employees are probably smart enough to make out, from the text of the link, where they'll be going!

The Real Threats

With Internet penetration increasing by the hour, fewer people are falling prey to human engineering. More and more hackers and crackers are therefore focusing their attention on finding ways and means to infect your computers with bugs that will allow them to gain access to your computers and their data.

For a company, data is money; whether it's



an accountant's laptop that contains vital company information, or your browser's cache which contains your various passwords, it's all up for grabs! Since there are so many ways that people try and get into PCs, we'll break them up into the following categories to give you a general idea what to look out for.

Adware / Spyware

There's a fine line between adware and spyware: very often, they go hand in hand, but a lot of software products are adware-supported and do not contain spyware. The perfect example here is the Opera browser—it just displayed ads from Google, and contained no spyware. However, many software (especially desktop theme packs, screensavers and the like), are filled with spyware. Very often, a smaller software company will bundle their software with adware or spyware from a bigger company, because the former has to cover development costs. In fact, sadly, a lot of the "freeware" out there is adware- or spyware-supported.

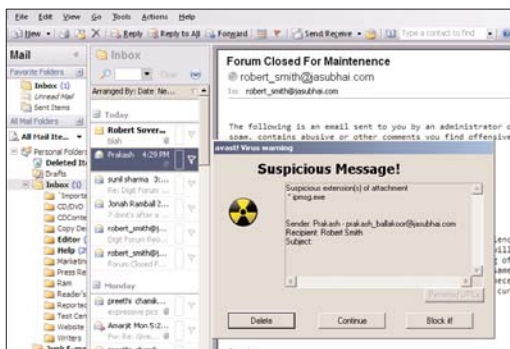
What you need to do is make sure all your computers are protected with anti-spyware tools. Two excellent examples here are Spybot Search & Destroy, and AdAware. Make it a policy for your employees to check and clean their PCs frequently using these tools. It's accomplished at the press of a button.

You could also make sure that none of your employees are allowed to install anything without permission from the system administrator. The simplest way to do this in Windows XP is to have your admin password-protect the Administrator accounts on all PCs, and make lower-level accounts for employees.

ActiveX

Though a lot of good software uses this Internet Explorer-based browser installer to integrate its content or services with Windows, many more sites try and trick users into installing malicious ActiveX code into their browsers. If ever there was a software that did more harm than good, it has to be ActiveX!

Be aware of the fact that many of your employees probably visit "warez" sites. If you're in a position to do so, enforce a policy that dictates that no employee should visit such sites—your admin's logs should tell you who was where on the Net. We say this because virtually any software "crack" downloaded from warez sites contains



Make sure to always protect yourself with a good anti-virus software that can check e-mail as it arrives

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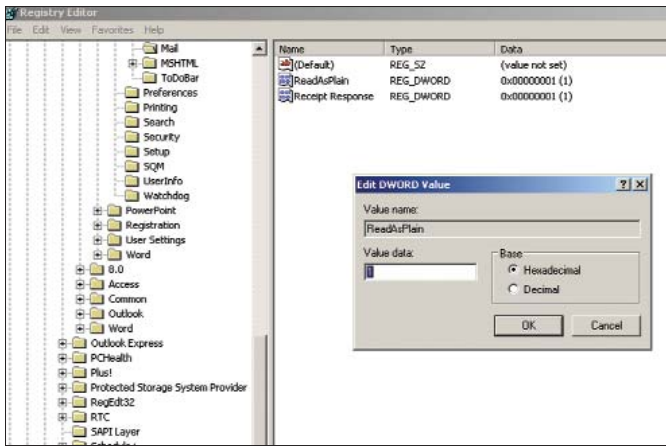
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Serving Society Through IT



Make sure your e-mail client is set to remove all HTML tags

some sort of malicious code that puts your computers at risk. Then there is, of course, the whole legality issue, which we won't get into here.

A more drastic solution to the "warez problem" would be to have your admin create lower-level accounts for your employees and restricting them from downloading anything.

Windows Update

It's funny—most users will spend hours entertaining themselves online, but will promptly stop "Automatic Updates" for Windows as soon as they see the little icon pop up in the taskbar. A lot of people actually permanently disable this update service. We suggest that system admins update computers regularly.

Passwords

A lot of people use public computer terminals, such as at cyber cafes. Now, when accessing office mail using Web mail, if a user checks the "Remember my username and password" box in the site or browser preferences, they're leaving their inboxes open to anyone else who uses the computer after them. This can result in secrets being leaked, especially if the employee is of a high enough rank.

Anti-Virus

Make sure you have an anti-virus application that scans both files as well as chat and Internet traffic. A tool that scans all data that goes to and fro over the Internet, while also scanning the files being saved on your computers, is a must. A good anti-virus application should detect malware before a site or e-mail message even prompts you to install the malicious software.

Here's something we can't stress upon enough: update your virus definitions regularly. This is very easily achieved: enable automatic updates in your anti-virus software. This will result in a message popping up once every few days saying "An update is available. Do you want to download and install it?"—or something of that sort. Don't say No to these messages—just let the software update itself!

In addition, your company e-mail server should have an anti-virus program on the server itself to remove malicious software embedded in e-mails before they reach your employees' Inboxes.

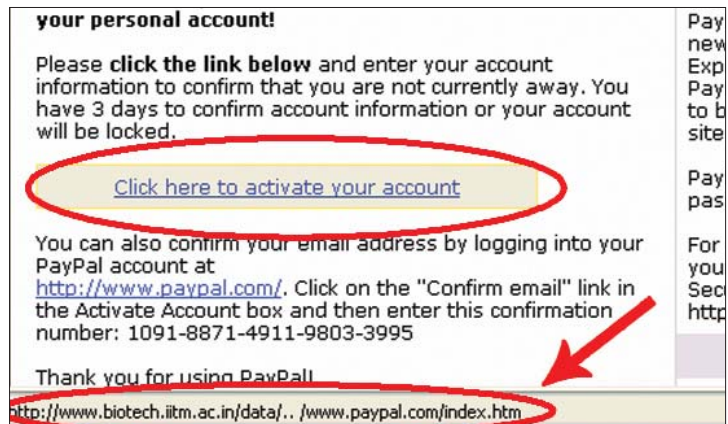
E-Mail Attachments

Beware the e-mail attachment! This path into a computer can be the death of your data...

If your company uses Outlook, ask your system admin to disable the Preview Pane on all computers, and to make sure your anti-virus scanner scans mails as they arrive. Also make file extensions visible on all your computers: in Windows Explorer, go to Tools > Folder Options... > View, and uncheck "Hide extensions for known file types". This will help prevent users from opening a virus thinking it's a Word document!

Firewalls, NAT Servers And Proxy Servers

You should have a firewall for both your Internet connection as well as any wired or Wi-Fi network connection. A firewall will prevent malicious users from seeing your computer online, and also block a lot of unwanted traffic to and from your system. A NAT (Network Address Translator) server will be the face of your company computers, thus showing the world only one computer. Hackers are less likely to attack what looks like a single computer, because they prefer to get into large networks.



Here's a standard phishing attempt made on your PayPal account—it seems like someone from the Biotech department of IIT Madras is trying to get rich quick, or at least someone's using their computers to do so

A proxy server solution such as Squid for a Linux server will help you keep your employees in check. You will be able to generate logs to find out who does what and who visits what, and also give you the option to block access via port blocking (effective against P2P) and keyword blocking (effective for blocking words such as porn, xxx, crack, serial, etc.)

A Final Word

Though *Digit* can advise you on how to battle threats that come in the form of data packets, there's no way we can help you protect your data from other humans! Make sure important company data is only shared on a need-to-know basis, and not openly accessible by anyone.

If we've scared you, we've achieved our task, and we hope you will begin looking for more security holes into your company and its data, and also better solutions to manage its security. ■

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Do You Need A Web Site?

Is a Web site necessary for Small and Medium Enterprises?

An online presence has become a necessity

SAS Pvt Ltd, located at Vashi, Navi Mumbai, is a computer firm that deals in all kinds of computer hardware and peripherals, and also provides maintenance and other computer-related services. More than 90 per cent of their customers are in Navi Mumbai.

“More than a decade has passed since we began trading our products and providing services to our clients in Navi



Sanjay Agarwal
Director
Systems And Solutions Pvt Ltd

“Through our site, we want to speak about our experience, our products, and our services”

Mumbai. We decided to start our own Web site in 1998: we felt a Web site was necessary to handle clients' needs and queries. Since then, we have observed a notable increase in the number of people approaching us for queries. Most of these people are now customers.

“Basically, through our site, we want to speak about our experience in this business, the variety of hardware and peripherals we deal in, and the computer-related services we offer. We also invite clients to enrol in promotional schemes and offers.

“We also provide support for issues relating to drivers, by providing direct links to the official Web sites of all the companies whose products we sell. We feel the necessity of a Web site to meet growing needs and attract more customers.

“We definitely recommend having a Web site, as customers these days are going online for any bit of information. An online presence has become a necessity. The Internet is becoming the primary source for information, and will soon be available on handheld devices and cell phones.”

Customers prefer to come directly to our shop for deals

PC Guide, located at Lamington Road, Mumbai, is a computer retail firm that has been dealing in computer consumables, peripherals and LAN accessories since 1996. The majority of their customers are located in Mumbai.

“We've been in business for almost a decade now. Walk-ins and phone calls are our way of doing business.

“A few competitors maintain Web sites in an attempt to expand their clientele. We have not



Vinod Nissar
Proprietor
PC Guide

“believe in bargaining, and don't want to get involved in bargaining online”

found any notable increase in their business despite their online presence. Besides this, we do not have the staff to maintain and look after a Web site. Also, customers prefer to come directly to our shop for deals. Since we are in the retail business, we believe in bargaining, and definitely don't want to get involved in bargaining online by stating the price of our products.

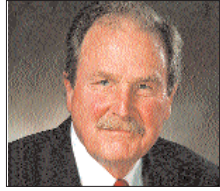
“Today, anybody who is interested in buying a computer-related product keeps himself updated about the products available in the market by means of newspapers, magazines and the Internet. All our customers are well-informed, and we don't think there is any need to inform them about products or features.

“We don't recommend a Web site for a small / medium enterprise, considering the human capital and monetary resources involved. Even today, a customer will buy a product only if he is completely satisfied after having personally looked at it.”

*As told to Samir Makwana
(samir_makwana@thinkdigit.com)*



120 PGR 3 (Xbox 360)



127 Compression Is Key



140 Of Billionaires And Beds

Digital Leisure

Technology Beyond Work

Lead Feature

Timepass Tips

Got time to kill? Got an unlimited-usage broadband connection? Welcome to Time and Bandwidth Wasting 101...

Agent 001

Back in 1999, I was one of the first few Indians to have an unlimited, always-on connection. It was only 64 Kbps, nothing to brag about, but at least I didn't have to worry about phone bills! For a thousand rupees a month, I'd managed to break free of the shackles of copper wire, local call charges, and my parents moaning about how no-one could ever get through to our phone! What's more, I actually used to get 64 Kbps (8 KBps) download speeds,

which was a *lot* faster than the 16 Kbps (2 KBps) I'd become accustomed to on dial-up.

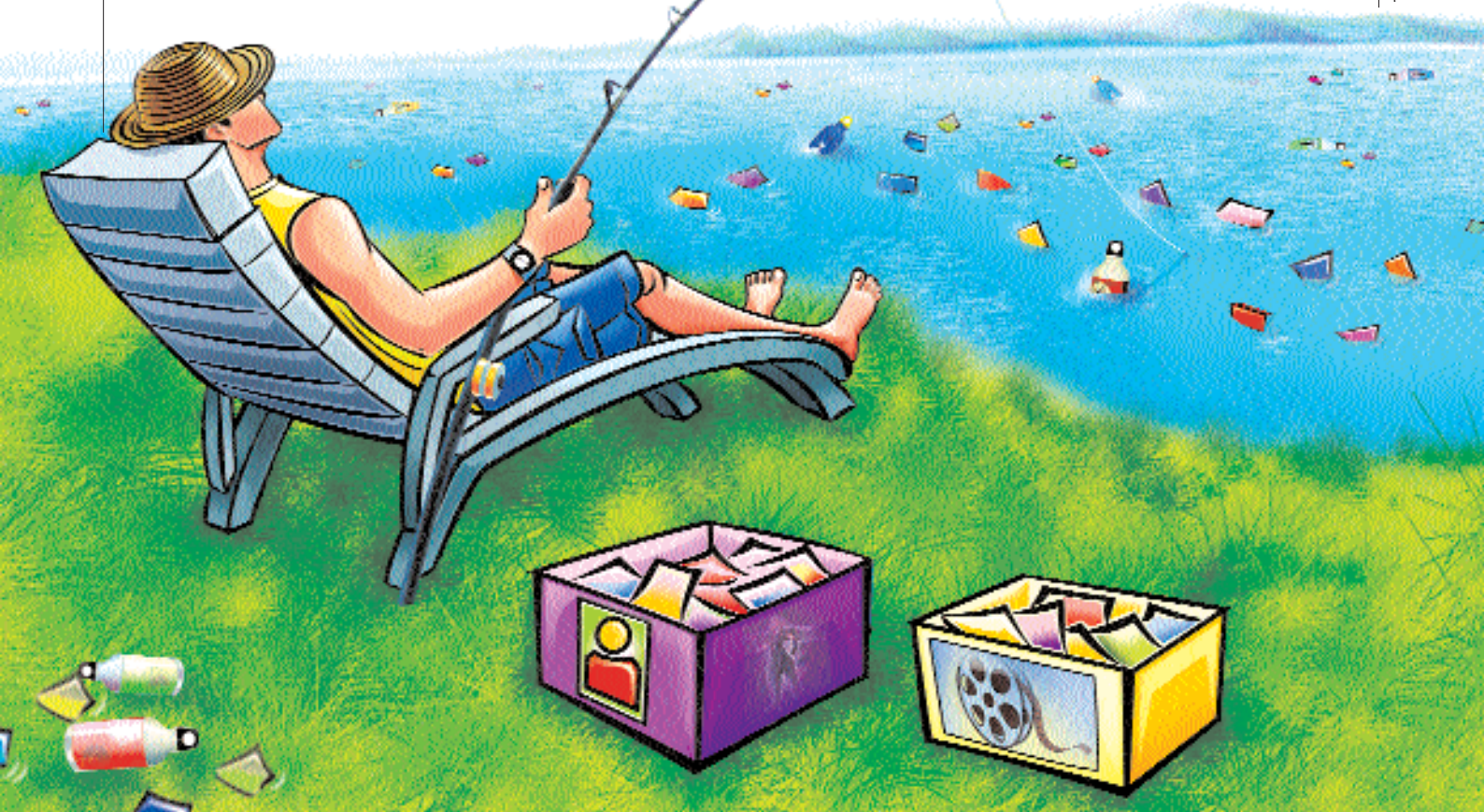
Because it was 1999, broadband ISPs were still learning, I guess, and I soon discovered that my ISP had limited the download speeds, but had forgotten to do the same with uploads. The result? A mere 8 KBps for downloads, and a whopping 400 KBps upload speed!

I'm somewhat of an IRC (Internet Relay Chat) addict, so I was promptly on my favourite network, showing off to my friends. There were even people in Amer-

ica who didn't have 400 KBps upload bandwidth back then!

I found myself obsessing about my upload capabilities, not wanting to let it go to waste! I also knew that sooner or later some engineer at my ISP would awake from his slumber and prick my heavenly bubble. As it turned out, this scenario lasted about six months, and I uploaded more in those six months than I've downloaded since 1999. I also set up my site on my own computer, an FTP server, IRC bots to transfer and share loads of files, and absolutely anything that would use my upload capability.

Illustration: Shri Krishna Patkar





Upgrading my Ubuntu installation took two days on my connection—I would classify anything above 20 MB as a heavy download”

Anurag Patel
Mumbai

But Why?

That’s the question a colleague asked me recently as I was narrating tales of my days of uploading joy. To be honest, I still don’t know... perhaps it is this unsaid character that’s woven into our subconscious from Day 1: “Never let an opportunity by,” “Waste not, want not,” and various other little pearls of wisdom we’re subjected to as kids. All I know is that, at the time, having the capability to upload at 400 KBps and *not* uploading anything seemed a *crime!*

Today, so many of us have unlimited, always-on connections with speeds between 64 and 256 Kbps that the phenomenon described above is more commonplace. I asked around and found I’m not special (as in “He needs *special* schooling!”), and hordes of people are doing exactly the same thing with their connections.

Warez

We all know that many of us are downloading illegally using P2P clients. Of course, most of it really isn’t a waste of time and bandwidth, but very often, especially for people with 256 Kbps unlimited connections and above, you soon run out of things to download—you already have all the latest movies, you have all the music you like, now what? Some of the people I spoke to claimed to just start downloading whatever everyone else was downloading—especially the torrent users. “The advantage with torrent sites is that they list the latest uploads as

well as the most popular ones, so all I do is choose a nice big file that interests me and set it to download,” said a college student from Mumbai on condition of anonymity.

“What if you already have those files?” I asked. “Then there’s always enough porn to download,” he replied.

Pornography

It didn’t surprise me when most of the people I spoke to said they downloaded porn when not downloading anything else. Then there was a student from a well-known college in Bandra, Mumbai, who said, “Well, actually, my bandwidth is used mostly to download porn, but when I’m not doing that, I surf casually looking for interesting software or a good print of a movie.”

Pornography was such a popular choice, I almost didn’t feel like adding it to this list of *Timepass Tips*—it seems more of a primary use for broadband! Anyway, one thing is clear, a lot of people (almost all male) spend a lot of time using their bandwidth to enhance their knowledge of the private lives of the birds and the bees.

Open Source Psychopaths

It’s really no secret that there are thousands of open source supporters who feel compelled to have Anti-Microsoft feelings. If not Microsoft, these people generally dislike all the big corporate software companies - Symantec, Adobe and the like. So

it should come as no surprise that some of them spend all their free time plotting to take over the world from those they think have taken over the world!

One such friend of mine uses FreeBSD as his OS. He’s in the US, but I have an account on his box. Imagine my surprise when I saw that he had queued up almost every trial version Microsoft has on offer for download at Microsoft.com. “Converting to Windows?” I asked. I should have known better: “Nah, just putting my 3 Mbps connection to some good use and doing my bit towards wasting some of Microsoft’s bandwidth.” Turns out there are a group of 30 or so of them, all of whom use open source operating systems, and all of whom set up scripts to download anything available at Microsoft.com when they’re not doing anything—and oh, they all have 3 Mbps connections or faster! So if you’re trying to download something from Microsoft and aren’t exactly getting blazing speeds, you have my friends to thank for that!

Online Gaming

Gaming is turning out to be a very popular use for broadband. Though most of us are more likely to go to places like Yahoo! games, an increasing number of Indians are getting addicted to online MMORPGs (Massively Multiplayer Online Role Playing Games). If not that, then it’s multiplayer First Person Shooter (FPS) games—*Counter Strike* is the clear winner here for India. Most of the people I spoke to were obsessed with *Counter Strike*, and wanted even more servers to play on. Broadband connections bring with them a wonderful “value-added service”: the local LAN setup you get within your neighbourhood! With a population density ants would be proud of, Indian metros are generally divided into areas of dominance by ISPs. So chances are that the ISP you have a broadband connection from is also supplying everyone in your local area, which translates to a nice LAN setup for gaming—with blazingly fast ping times and the opportunity to be famous amongst peers you actually meet!

Multimedia

With broadband, no longer do we need to avoid pages that con-

Hilarious!

Here are some of the wackiest quotes I got when asking how people trash their time and grab their bandwidth:

“For about a month, it had to be visiting the Digit Forum after its shift to vBulletin, when you guys didn’t enable gzip compression! 300 KB a page was a real waste of bandwidth!”

All readers should know that this has since been fixed, and it was only for 12 days that we had this problem!

“I download homosexual porn, zip it, and rename it to one of the latest software releases. I then share it on P2P networks—just doing my bit for the fight against piracy.”

“All I seem to do online is browse through Amazon.com, looking for good books. When I find one, I head over to my favourite torrent sites or an IRC network and get the e-book!”

“I use P2P 24x7, and download everything I can. But it’s not what you think... I’m actually looking to build a huge repository of viruses, and I get a new one almost every day via P2P, which one day I shall unleash on my college computers. Why? Because they overcharge students, reserve half the seats, and I know more than my computer professor does about computers!”

“When I’m really bored, I open up wikimapia.com and add some bogus and funny places in India. The most recent one I added was a friend’s house—only I added it in on top of a sewage pipeline!”

tain the word “streaming”, as in streaming audio or streaming video. An increasing number of people are now able to watch video or listen to Internet radio. One such person is Anurag Bhateja, MD of Bhateja Computers in Chandigarh and a self-confessed Net freak. “I love funny Web sites and videos. I watch online trailers and read about the entertainment industry in my free time. I also love sites such as StumbleUpon.com.” He says he’s been inspired by the articles of Pawan Duggal, noted cybercrime lawyer: “I am totally against piracy and pornography, and am working on a site that will educate people about Internet crime.”

Another *Digit* reader (and another Anurag) is Anurag Patel, an IT Professional from Mumbai, who has an always-on connection. “I feel like my bandwidth is being wasted if I am not doing something with it. I recently upgraded my Ubuntu installation, which took almost two days. When I am not doing anything like that, I spend time on YouTube.com, or look for developer documentation. I also waste a lot of bandwidth downloading from RapidShare.de, from links that other *Digit* readers on Yahoo! Messenger keep providing—even though most of them are useless for me, because I’m on Linux.” For those of you who don’t know about it, RapidShare has become a popular place for people to share almost any sort of file with their friends.

Another popular way of using bandwidth is Internet radio, especially from within programs such as Yahoo! Messenger or Winamp. A *Digit* reader from Delhi, a college student who asked not to be named, uses Winamp for streaming video. “Since I have a computer that my sister and father also use, I cannot really use my broadband to download the things I want, because they might find it on the hard drive. Instead, I use Winamp’s Internet TV Library, which has everything from music videos to porn. I also visit adult sites that offer free streaming video.”

Downloading Software

Most of the people we spoke to were frequent visitors to sites such as ZDNetIndia.com, Download.com and Softpedia.com. And most of them didn’t even feel the need for software, and didn’t have any task they needed to accomplish—they just wanted to know what’s out there.

“I’ve downloaded about 30 GB of multimedia-related software in the past four months—just to try them out,” says Anurag Bhateja. And he’s not unique in any way: most people are doing exactly the same with their broadband pipes.



A 256 Kbps unlimited connection is fun. I got this connection four months ago and have already downloaded about 37 GB”

Anurag Bhateja
Chandigarh

“I didn’t even know there was software that could automatically sort my music collection for me until I saw the category on Download.com. I downloaded about five of them, tried them all, chose the best one and then promptly found a crack for it—an evening well spent online,” says the student from Delhi who was quoted earlier—rather cheekily, I might add!

Using World Mapping

Google Earth, Google Moon, and WikiMapia (www.wikimapia.com) seem to be the most popular choices for people who dabble in online mapping. A lot of the people I spoke to spend at least an hour a week on Google Earth and WikiMapia, adding places they know to the community Web. Though it’s absolutely pointless for most of us, it still seems fun for some people to put their homes on a world map!

Clogging The Pipes

As you can see, there are many different ways in which people use (read waste) bandwidth and time online. Some of these are actually good, because we can learn from them—and I don’t mean the porn!

From my little survey, which was only conducted with a little under a hundred people I know online or from the *Digit* Forum (<http://www.thinkdigit.com/forum>), I found that a lot of people do their downloading at work, where most people have broadband access. They then burn CDs/DVDs, or transfer the data to external hard drives or USB drives to take home. This may become cause for concern to employers, because a lot of people seem to be using company-provided bandwidth for some very illegal uses—but that’s another discussion for another time.

At least some people I spoke to seemed to have found constructive ways in which to utilise bandwidth, such as downloading and then learning how to use new software. A few even believe that bandwidth should be conserved...

I’ll leave you with a quote from a call centre manager in Mumbai: “Sure, I download pornography and warez, but only what I need and when I need it. I’m against this whole ‘leech every last Kbps you can’ thing. If everyone only used what they needed, there’d be more to go around, and bandwidth would be cheaper!”

“We save water, we don’t waste food, and we suffer in the heat to conserve energy—why can’t we conserve bandwidth the same way? After all, what’s more scarce in India than bandwidth?”

Now *that’s* food for thought!■

agent001@thinkdigit.com

Home Ad



PGR

PROJECT GOTHAM RACING 3

The best-looking Racer on any platform. Ever.

The concept, of course, is as old as the hills—race the most expensive cars in the world, bonk them against walls, make their tyres squeal, and generally do things to them that you wouldn't dream of doing even to your old banged-up Fiat.

The Line-Up

PGR3 gives you an embarrassment of choices when it comes to the cars you can race—choose from the best of Ford, Ferrari, Mercedes, McLaren, TVR, and many, many more. Notable for their absence are BMW and Porsche, but that ceases to matter when you see what's on the platter. Car models are incredibly detailed, and are nearly indistinguishable from their real-life counterparts. You plonk them in the varied garages that you can create, and can walk around gawking at them at leisure. On the track, they sound really good, but perhaps more visceral engine roars would have felt better.

Hit The Road

Undoubtedly the highlight of the game, the tracks feature real-life streets from cities such as Las Vegas, New York, Tokyo and London—even the Nürburgring F1 track in Germany. While you will be racing in a closed section, admiring the rest of the city is a pastime you'll end up being quite tempted to indulge in. The streets of Las Vegas, for example,

are a tremendous joy to behold, and more often than not, we ended up stopping in the middle of races to take a look around and admiring the most famous hotels—Caesar's Palace, the Bellagio, and what have you.

The races are all about glamour—tracks are lined with eager spectators photographing your every move. One rather interesting element did come up here—when you crash into the side of a track, the spectators jump back in horror: nothing great, mind you, but the attention to detail makes one smile.

Just Me And My Car

What we love about this game is its ability to satisfy both the *NFS*-style arcade nuts and simulation fanatics. Car control is quite a challenge, but once you've had enough practice, you can use them exactly the way you want. Perform stunts like brake slides, drifts, 360-degree turns and other wild moves to earn *Kudos*, which will help you unlock some of the concept cars you can drive. This isn't as easy as it sounds, though—if you so much as tap the track walls, all your effort falls to naught, and there's nothing more frustrating than executing a perfect 1-second (that's longer than you'd think) drift, a break-neck brake slide, topping it with a screeching 360 and then hitting the wall with all the grace of a boiled egg.

Activity Time

Through the game, you'll be participating in different racing modes—nothing ground-breaking here—just your standard old street races, beat-the-clocks, and a re-jig of the latter called Time vs Kudos, where the clocks stop briefly to let you complete the race depending on the Kudos you earn. The biggest challenges, though, are the Style Challenges, where you have to earn a set number of Kudos before time runs out. Depending on the type of racing you prefer, this can be one of the most fun or the most annoying parts of the game.

Other People

The sad thing about *PGR3* is you're going to have to supply your own entertainment. Opponents have a bland, boring and "propah" driving style that reminds one of old aunties. They lack any sort of aggression and always follow the optimal path in a race, and you'll rarely hear a skid off their tyres. This is, when you think about it, quite stupid: if you're expected to earn Kudos by generally insane driving, isn't it logical that your opponents should be trying to do so too?

You can also hook up another controller to your 360 and race split-screen to get the necessary excitement you need from knocking each other's cars about a bit.

Parking Brake

The pictures above are actual game screenshots, not from cutscenes or artwork. Take a look. Do you really need more evidence about how good this game looks?

Definitely one of the best racing titles for consoles, *PGR3* is a must-have for simulation geeks, though arcade fans are in danger of getting bored.

nimish_chandiramani@thinkdigit.com

RATING: 8/10

Developer:
Bizarre Creations
Publisher:
Microsoft Game Studios
Platform: **Xbox 360**



Combat Ghost Style

G. R. A. W. : Fighting a war calls for Advanced measures

A Tactical Squad Shooter (TSS) is never an easy act to set, let alone follow. Advanced Warfighter continues in the same vein as the earlier offerings from the Ghost Recon series. Its trouble in Mexico City this time, with the Canadian President assassinated, and your own President having disappeared. It seems separatist-groups have gone guerilla, and it's up to you Captain Scott Mitchell and your band of ghosts to save the day err... President, err... whatever....

Gunplay oops Game-play - Games in the TSS genre aren't exactly known for storylines, GRAW isn't an exception. You're inserted into each mission, with objectives, and each mission furthers the overall game plot a bit. Being squad based don't even dream of charging in guns blazing, you'll become a ghost (ditto your teammates), and we don't mean it in the way the game implies! You'll need to chalk out a course of action, set waypoints for your squad, move under cover yourself, always ready, always alert. Some enemy nests have to be flanked whilst under cover to be taken out, not stormed. Team-play is an integral of the game, even more so in

GRAW than earlier titles in the series.

An essential part of game-play is weapon realism, and enemy reactions to your presence. GRAW excels here, weapons play with immense realism. Your Scar L (one of the weapons available), recoils, and in general feels just as a real assault rifle should! Enemies will use cover, move around taking pot shots and then ducking at times. Object physics has been integrated into GRAW well. There was an enemy concealed behind a car bonnet, taking pot shots at me. I shot the front tire causing the car to sag due to the flat. This caused his head to become visible, perfect for a sniper shot! Little elements like these add to the level of player involvement in the game. And that's a very good thing. Immersion as we know is the chief objective of any great game, and GRAW takes a very strong step down this line!

Candy for your eyes and ears - Visually GRAW is one of the best looking TSS games till date. Aurally GRAW delivers the good, right on the sweet spot. Combat effects are good. Voice acting and enemy reactions are good. One little niggle is your team mates display unit (you can

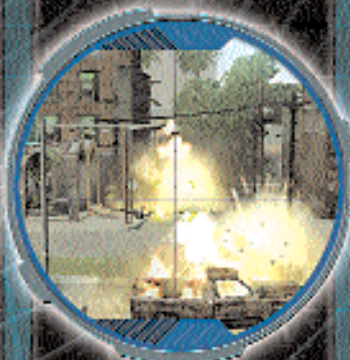
use this to see from their perspective, via a camera mounted on their suits). This feedback view is basically line drawn and 2D in nature, besides spotting bad guys, (red dots), it's pretty much useless.

Unfortunately GRAW exacts a heavy toll on system resources, and forget about eye-candy without a good 256 MB card. If you have a good rig however, the game will be that much more rewarding.

A well laid out game, which will satisfy that secret craving you've harbored to join special ops. If you're a 'shoot-em up' sort of bloke, the depth of tactical action GRAW offers won't impress, and you should look elsewhere for kicks.

Hardcore Ghost & Rainbow Six fans will feel right at home here, and fans of the genre will enjoy themselves. It has a very few flaws that detract a just a teeny but from the experience, and some might feel the Ghost franchise has grown a bit long of tooth, but Advanced Warfighter is definitely worth the wait, and the price. We're giving the new ghosts a highly recommended tag!

michael.browne@thinkdigit.com



Rating: 9/10
Developer:
Red Storm Entertainment / GRIN
Publisher: Ubisoft
Distributor: E-xpress interactive
Contact: 022-28850245
Price: Rs 1299
System Requirements
P4 1.7 GHz, 512 MB RAM,
Directx 9.0C compatible
128 MB graphics card

HALF-LIFE²

— EPISODE ONE —

At last, the waiting's over and we find out what happened after that silly time stopping explosion at the end of *Half Life 2*

WARNING

If you haven't played Half Life 2 before reading this review, you haven't lived yet, and probably won't understand a thing. Make sure you play HL2 before playing HL2:EP1

I hate it! This whole episodic release thing, that is. What's with this whole Episode 1, 2 and 3 thing? Waiting for *Star Wars* was bad enough, without Valve doing their Lucas impressions!

I finished *Half Life 2* in two sittings—that's how much I love this series from Valve. However, at the end of it all, I was left speechless: "How could they end it like that? What were they smoking? Arrrrrrgh!"

Anyway, rants about the ending of *HL2* apart, I had to wait three days to get my hands on a decent enough graphics card before I was willing to fire *Half Life 2: Episode 1 (HL2:EP1)* up. I played it on a AMD Athlon 64 3200+, 1 GB DDR 400 RAM with a ATI Radeon X1900 XT—told you I waited for a good card!

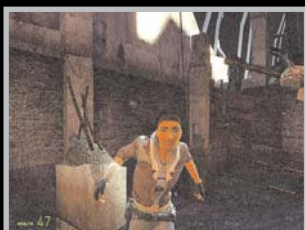
I had the volume up high and was waiting eagerly for an explanation of how Alyx Vance and I had survived that time stopping explosion—it never came...

I won't spoil it for those of you who haven't played this yet, but suffice to say, I was more confused about the events of the end of *Half Life 2* after watching the beginning of *Episode 1!*

Anyway, on to the game! It's typical *Half Life 2*, the only difference being that you start with the Gravity Gun from the get go. Of course it takes awhile before you get any more weapons, so it's all defying the laws of physics till then! The story is spelt out in the many screenshots of this review, and it involves some good graphics, amazing voice acting and very nice looking character models. The



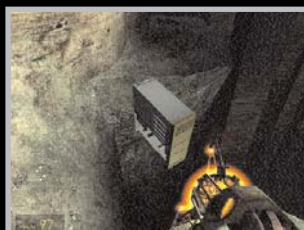
1 If she likes *me*, how come everyone else is touching her?



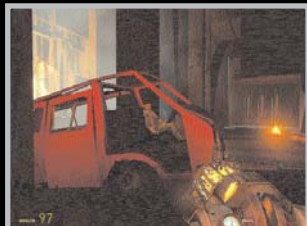
2 She's happy to see me again. Do I get a big hug?



3 Typical of dads; they always spoil the romance!



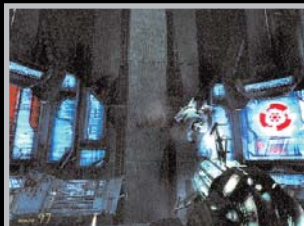
4 I can't resist throwing my old computer away...



7 We go for a drive; turns out to be a rollecoaster of a ride



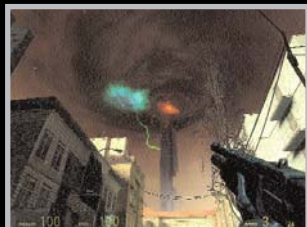
8 A big guy tries to butt in on our conversations...



9 The next guy gets his brains splattered on the wall



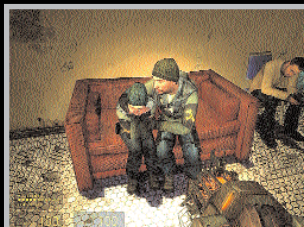
10 I save the world again, temporarily though...



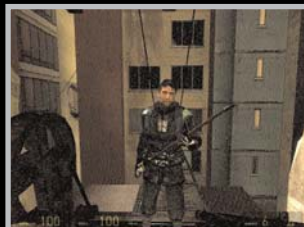
13 Whoops, no more tacos for breakfast from now on



14 That's a big fly. Rocket-propelled-flyswatter time!



15 Is it me or is this *déjà vu*? Stop copy-pasting code!



16 There's Barney, and he found my crowbar. Oh joy!

models. The inclusion of HDR (High Dynamic Range) into *HL2*'s Source engine means that the lighting is spectacular.

Characters

Alyx and Dog (her pet robot) are back with you, and Alyx is a big help throughout *HL2:EP1*. Alyx, as usual, is integral to the storyline, and you just cannot get past a lot of doors without her and her magic *Combine-force-field-door-shorter-outer*. She's not invincible though, so don't leave her standing around fighting Antlions while you cower in a corner!

Towards the end you meet up with Barney again, but only for a short while. There are some characters that remind you of *Half Life 2*, and, in fact, I swear there's one scene in *HL2:EP1* that's identical to a scene in the beginning of *HL2*—see screenshot 15 and see if it rings any bells! All the characters are more believable though, but only because they swear a little every now and then—a lot better than the squeaky-clean *HL2* dialog!

Maps And Graphics

If you've played *HL2*, you'll remember Ravenholm and Highway 17, and also City 17—*HL2:EP1* takes place only in City 17. The maps are pretty standard, the secrets and puzzles easy to find and solve, and path finding is a snap. The new maps are not nearly as vast as *HL2*, which is a good or bad thing—depending solely on what you prefer. I just preferred getting lost in the *HL2* maps, which made the whole experience more realistic—especially since I'm geographically challenged in real life anyway!

The graphics, however, are superb, and are a lot better than in *Half Life 2*—just the addition of HDR makes a world of a difference.

Weapons

All the same, and you don't find them all in *Episode 1*. As I mentioned earlier, you start with the Gravity Gun (GG), then find the pistol and submachine guns after you kill a few Combine soldiers. When you finally meet Barney, he hands you the infamous crowbar, making some really corny, yet hilarious remarks about it. As it turns out, the only weapons you *need* are the GG, the shotgun and the missile launcher—you can easily finish a game using only these.

Story

To tell you the story, we'll use screenshots, but you should know that it's nothing as vast and engrossing as *HL2*, and is over before you know it. It took me 3 hours to finish *Episode 1*, and it shouldn't take even first time *Half Lifers* more than 6 hours to finish it. But, then again, how much more can you expect from a \$20 (Rs 900) episode?

I was very disappointed by the usage of time though, and I felt a lot more should have happened in those 3 hours that I was playing. Overall, just the Ravenholm level in *HL2*—which sent shivers down my spine the first time I played it—was more entertaining than this entire episode. Overall, I'll give *Episode 1* a rating of 7/10, because it was way too short and was pale in comparison to *Half Life 2*.

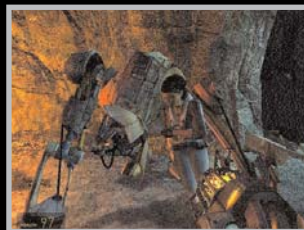
Of course you should also know that I will be one of the first to download and buy *Episode 2* when it's released!

robert_smith@thinkdigit.com

Rating: 7/10
Developer: Valve
<http://ep1.half-life.com>



5 ...then I get a car thrown back at me for my trouble



6 She loves the stupid Dog more than me



11 She's scared! I use my gun barrel to calm her down



12 Darkness and bugs should make her happier



17 Strider, strider burning bright. A fight at last!



18 There goes City 17; time for *Episode 2*, and lunch...





The game that Half-Life killed now puts itself at the mercy of Half-Life 2: Episode One. Genius.



Rating: 7/10; **Developer:** Ritual; **Publisher:** Valve; **Price:** \$19.95 (Rs 895) download via Steam, includes the original *SiN* (yes, we get the pun)

Minimum System Requirements:

1.2 GHz processor, 256 MB RAM, DirectX 7 capable graphics card, Internet connection

SiN was probably the sunluckiest game ever. It had so much going for it, notably its protagonist John Blade—the John Wayne-meets-Clint Eastwood-type drawling, wisecracking head of HardCorps, a private security firm in the otherwise lawless Freeport City. It also brought to the FPS genre the ability to drive a number of vehicles, and the concept of the head shot doing more damage to the enemy (yes, before Counter-Strike). Critics praised it, but just as its sales were picking up, the strong, silent Gordon Freeman made his debut and everyone forgot SiN forever.

Out Of The Shadows

SiN Episodes: Emergence opens with a captured John Blade (you) lying in a lab of sorts, with the evil *I-want-to-make-humans-better-by-mutating-them* head of SinTEK, Elexis Sinclair, waving her rather large bosom in your face while drug lord Victor Radek injects you with some mystery goo. You are soon rescued by Jessica Cannon—your apprentice and the most competent digital desirable since Alyx Vance (HL2)—and must now go on a quest to find out what that slop was. You'll be fighting your way through docks, into the overturned tanker that houses the lab where the deadly U4 mutagen is manufactured, finally ending in Victor Radek's Supremacy Tower. The game offers you about five hours of play—not unexpected in these episodic times, but still too short.

The Enemy

One of the biggest hypes about SiN E was the adaptive AI system, which tracks your abilities and adjusts the game's difficulty level accordingly, thus assuring everyone five full hours of gameplay no matter what skill level. It records detailed statistics about your gaming style—from your accuracy to how often you use which weapon and how many times you died during the game. Testing this system was quite simple—I went through the game once shooting enemies *only* in the head (dying a few times while I aimed, too), and once with two shots to the chest. Sure enough, when you score enough headshots, they start coming at you with helmets on quite early in the game, while in the latter case, they just padded up on armour, making it three shots

to the chest to kill them. When you seem to be dying too often, the game even drops extra health packs and ammo to help you along.

While the game is intelligent enough to offer you this challenge, the enemies themselves disappoint in the brain department—they're not much more intelligent than most pumpkins I know. Nonetheless, they come in droves and jump from side to side, which makes them harder to kill, and they're generally very entertaining when you kill them: "{bang!} Ack! My knee! I'm down! Send for ba...[bang!]..ungh". There isn't much variety in the arsenal—the M90 Magnum, the X380 Scattergun and the M590 Assault Rifle—but just saying that does their abilities injustice. All weapons are ferociously deadly and the Scattergun can even shoot shrapnel which can bounce off walls and clear nasty corners in a jiffy.

Back Into The Shadows

It's odd that Ritual choose to release *SiN E* at the same time as *Half-Life 2: Episode One*—have they learnt nothing from SiN's fate? Comparisons to HL2 are inevitable, mostly because they're in your face. Female sidekick with slight crush on you? Check. Physics-oriented puzzles? Check. Battle with helicopter/airplane hybrid? Check!

Even John Blade seems to have been hanging out with Freeman too much—he's to have given up his wisecracks and fallen silent.

Endnote

In all fairness, there's nothing glaringly bad about *SiN E*. The voice acting and soundtrack is top-notch, the action is non-stop and loads of fun, and it's using the Source engine so it looks good without making your graphics card see the end of the road. There are even a good number of Easter Eggs ("The Dopefish Lives!"). The story is a standard campy B-movie script and thankfully doesn't take itself too seriously, but it's enough to make you come back to it out of curiosity. There's even the element of gratuitous near-nudity—you decide whether that's good or not. The only trouble with this one is that there's nothing that stands out as remarkably great, either.

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thinkdigit.com

Error 400: "You're using IE6..."

1 What was the code name of Netscape Navigator during its development?

- a) Gecko
- b) Web Explorer
- c) Mozilla
- d) Mosaic



2 What does SMTP stand for?

- a) Secure Mail Transfer Protocol
- b) Strategic Medium Term Plan
- c) Sharp-Minded Techno-crazy Person
- d) Simple Mail Transfer Protocol

3 Which of the following is *not* a function of the Graphics Processing Unit?

- a) Performing calculations related to 3D Graphics
- b) Rendering polygons and texture mapping
- c) Creating atomisation effects
- d) Creating lighting effects

4 What is technology of speculative threading which Intel is working upon called?

- a) Osmosis
- b) Genesis
- c) Nemesis
- d) Mitosis

5 What is "Error 400", which one sometimes sees while

browsing the Web?

- a) Request Time out
- b) Request denied due to syntax error
- c) Site Access Forbidden/Password Protected
- d) Bad file request

6 Which of the following is *not* a programming language?

- a) Pascal
- b) Findler
- c) J
- d) PL/I

7 Which of the following statements are true for Microsoft Windows Vista?

- a) It will require Vista Graphics supporting hardware
- b) It will incorporate a free anti-virus program
- c) Media Player 11 will be integrated with URGE, a digital music service from MTV
- d) All of the above

8 Which of the following services is *not* provided by Google?

- a) An image managing service
- b) Spreadsheet creation
- c) Music downloads
- d) News

9 Which of the following has nothing to do with operating systems?

- a) Ubuntu
- b) Symbian
- c) FreeBSD
- d) Windows MP

10 What is the question now being asked by some about Blu-ray?

- a) "Can it actually hold 100 GB?"
- b) "Is Microsoft secretly promoting the format?"
- c) "Is it really Sony's format?"
- d) "Was it actually developed by Toshiba?"

11 In which of the following countries have bloggers or surfers never been restricted by the government?

- a) Pakistan
- b) China
- c) Singapore
- d) Malaysia

In one way of looking at how quantum computers work, they perform massive numbers of computations simultaneously in "parallel universes"—that is, each individual computation happens in a different *universe*!

Did You Know?

Got an interesting question? Send it in with the answer to **TQ@thinkdigit.com** Mark "TQ" in the subject area.

Answers	
1. (c) Mozilla	11. (a) Pakistan
2. (d) Simple Mail Transfer Protocol	10. (c) "Is it really Sony's format?"
3. (c) Creating atomisation effects	9. (d) Windows MP downloads
4. (d) Mitosis	8. (c) Music
5. (b) Request denied due to syntax error	7. (d) All of the above

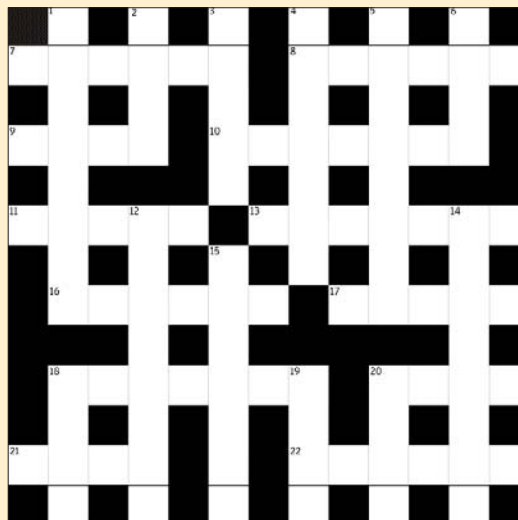
Crossword

ACROSS

- 7. ___ Or open file (6)
- 8. 'Ni' in Ni-Cad battery(6)
- 9. To digitize an image(4)
- 10. To run a programme(7)
- 11. A blocker on the website(3,2)
- 13. To put a programme or an application on the computer system(7)
- 16. ___ PC-type of notebook computer with a LCD screen(6)
- 17. ___ Call or long distance call(5)
- 18. One trillion binary digit(7)
- 20. A ___ or mobile phone(4)
- 21. Short for cable television (4)
- 22. Dissociate a connection(6)

DOWN

- 1. Total loss of electric power(8)
- 2. Integrated Services Digital Network(abbr)(4)
- 3. Register that sums two numbers(5)
- 4. Device that catches radio and television signals(7)
- 5. Part of hard drive that the read/write arms attach to(8)
- 6. ___ phone(4)
- 12. --- Flash ----- de facto replacement for the floppy drive(3,5)
- 14. A phone connection(8)
- 15. Online diaries(7)



- 18. --- Or back door- computer programme that bypasses security mechanisms(4)
- 19. A graphical path- 'rout'(anagr)(4)
- 20. Computer Aided Language Learning(4)

July Crossword Winner:

Sumit Ghosh, Gandhinagar, Gujarat
Send in your entries with complete contact details to **TQ@thinkdigit.com** on or before August 20.

One lucky participant will win **Intrusion Detection & Prevention** by Carl Endorf, Dr. Eugene Schultz and Jim Mellander
Published by Tata McGraw_Hill Publishing Company Limited



July 2006 Solution

P	A	P	E	R	S	I	L	I	C	O	N
A	H	A	Y	I	A	E					
S	T	A	T	I	O	N	N	O	C	T	
S	N	D	T	E	H	S					
A	T	M	B	A	R	S	E	A	C		
A	O	U	X	B							
M	E	M	O	R	Y	B	I	T	M	A	P
E			L	Z	N	E	E				
R	I	S	K	D	O	S	C	L	R		
I	H	M	O	S	I						
C	I	C	E	M	P	H	A	S	I	S	
A	F	G		O	S						
N	E	T	W	A	R	E	P	A	I	R	

McAfee “accidentally” fixes bug

When McAfee updated their ePolicy Orchestrator to version 3.5.5, they fixed a critical security flaw that could have had horrifying results. Without planning for it. And they admitted it, too.



Immortalise Yourself in Firefox's code

World Firefox Day is on September 15th, and if you manage to convince a friend to adopt the browser before then, your name might feature in the Fox's source code. Start spamming your friends now!



Escape

WHEN LIGHTNING STRIKES

iSaveLives

As if we didn't have enough iPod fanboymism to deal with, it turns out that the unassuming pod in question can prove to be an essential survival tool as well. This time, it's responsible for saving the life of young Jason Bunch, a resident of Colorado, USA. Seventeen-year-old Bunch was zapped by the heavens early July as he walked about his hometown listening to Metallica. He did note the necessity to take shelter as the storm approached, but it seems that the clouds were too fast for him. His next memory was waking up in bed with bleeding ears and nausea. He was rushed to the hospital soon enough.

Bunch's burns traced the wire running from his ears to his iPod, which was fastened to the hip. Apparently, the wire saved his life, directing the bulk of

the electric current away from his vitals. The 'pod, in a remarkable act of loyalty and general unawareness, sacrificed its life to save its master's, ending up with a hole bored straight through.

It seems to us that lightning, moving away from such boring targets as trees and buildings has turned to something more entertaining this year— young, tech-enabled kids. Young Bunch isn't the first teen to face off with these glorified sparks in the past few months—not too long ago, a 19-year old Mumbai girl suffered death by lightning, attributed to the fact that she was carrying all her friends' cell phones. Another case surfaced soon—London, this time—of a cell-toting 15-year old girl, though she lived to tell the tale.

Moral of the story (choose one):

1. Music players can save your life (try at own risk)
2. When it rains, stay indoors

CELLULITE WAR

Military Tech To Fight New Enemy

The battle to look good is a long, painful one. Ask any woman. Well, to be politically correct, ask *anyone*. We all despise our ungainly flab and will do anything to get rid of it. It was only a matter of time, then, that cosmetic companies would turn to new weapons— weapons of war even—to even the ground.

Israeli company Syneron Medical, long involved in the manufacture of machines for aesthetic medical procedures—vein removal

Whatever Happened To...

CAS

During mid-2003, there was big talk of CAS (Conditional Access System) to be implemented in the metros and select cities. Had CAS been fully implemented, we would today be having set-top boxes to view pay channels—and many non-regional channels today are paid-for. The set-top box cost upwards of Rs 3,000. Pay channels could be unscrambled only with the help of a smart card inserted into the box. This meant every viewer who subscribed to a pay channel would be accounted for, and the Government as well as the channel would be guaranteed of income from each subscriber.

In principle this seems fair—you pay for what you watch, and the Government doesn't lose out on tax—this besides bringing in transparency to the cable TV business. So why didn't CAS take off?

First off, the initial cost of the set-top box. Then, the higher, recurring cost of subscription. In theory the subscriber has the choice of choosing the channels he wants, but more often that not, one had to buy a package of channels. Cable operators would be able to charge only for the infrastructure and not for the channels. Despite the Government's push towards CAS, these and other factors prevented this good-on-paper concept from seeing the light.

Win! My Desktop

Haider's spaced out desktop comes from interesting use of ObjectDock and DesktopX widgets. He used:

The Moon Widget

The Global Clock Widget

The Planet Icon Pack

ObjectDock to hide the Start Menu, and A Registry hack to remove the Recycle Bin from the desktop.

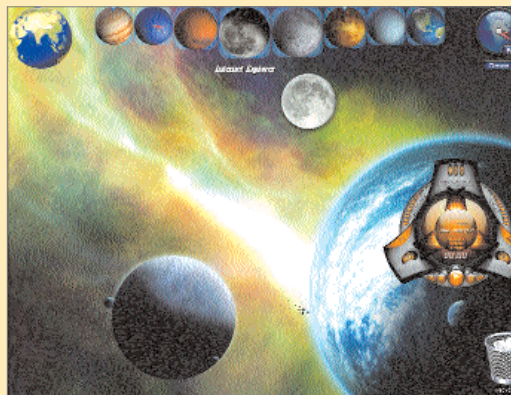
Congratulations!

Participate in this contest and win next month

**Microsoft 2003 Bible
All-IP Networks**

by Edward C. Willett

Published by  WILEY-INDIA



Send your desktop with description of how you made it to mydesktop@thinkdigit.com with the subject 'My Desktop'; and tell us your postal address, too.

DigiPick of the month

Hmm...Maybe this
keyboard will work



This month's
winner is
Shakun Shrestha
kathmandu, Nepal

Participate and win next month
Sudoku for Dummies
by Andrew Heron and
Edmund James
Published by



WIN!

Send in your entry and you could win an exciting gift just by sharing an amusing picture with a tech angle to it. The picture should have been shot by you, and should not have been published anywhere earlier. E-mail your picture with the subject **'DigiPick'** and your postal address **on or before the 20th of this month to digipick@thinkdigit.com**. One prize-winning picture will be published each month.

without looking like a horror movie and so on—have showcased their VelaSmooth system to sculpt out cellulite patches from our bulging bodies. The technology? The company's eLight and eMax systems that use intense pulses of light to do their dirty work. The technology was co-created by the company's chairman Shimon Eckhouse in the 1990s to get paint off military aircraft.

In these dark, pre-VelaSmooth times, we use lasers to fry follicles off skin, a procedure that may clear hair, but may leave unsightly blemishes, thus defeating the purpose. The VelaSmooth system uses light to heat up an area of the skin, and then RF (radio frequency) to act upon that area, to avoid burning. This system doesn't really eliminate fat, rather moving it around to places where it would look better, ironing out a few wrinkles in the process as well.

The next step for Syneron is to hit upon a non-invasive

way to remove fat—dissolve it, perhaps? The catch: the dissolved fat would enter your bloodstream, leaving you about 10 minutes to enjoy the new improved you before the massive coronary hits. Better yet, let's start injecting ourselves with nano-nukes and blow the stuff up.

I SEE FRAGGED PEOPLE

Gamer Rehab Centre Opens

We have, in the past (quite callously, we must admit), taken quite a few digs at gamers who died at their desks because nobody could wrench them away from {insert game of your choice here}. Seeing as how gaming can be as addictive as crack, it's only valid that it should be treated as such. That's right—alcohol, drugs, sex—such addictions are passé

now, and we now usher in a new era of rehabilitation programs—the game-addiction rehab program.

Addiction experts Smith and Jones have, at the Wild Horses Center for addicts in Europe, started the first program for compulsive gamers to help them regain their personal hygiene, social life and the use of their legs for mundane stuff like walking. While psychologists argue that game addiction can't be put in the same class as alcohol or drug addiction, this is clearly serious stuff. According to one inmate... er... client, who for five years rarely left his room due to his addiction to MMORPGs: "I couldn't go to the toilet because then I would have to leave ... I would take an empty bottle and pee in it."

They first start with a "detox" period, where they'll deal with the withdrawal symptoms of having the game snatched away from them, following which they will fill the "adrenaline vacuum" caused by lack of gaming with real-life substitutes. Now *that* sounds like fun—imagine getting to blow up people in real life! Or smash real million-dollar cars to bits! (No, silly, that's not what they really do!)

Digit's top 3 signs to tell if you're a gaming addict (issued in public interest):

1. Every time you lose, you take another stab and say, "This time, I'll win!"
2. You killed someone, but they didn't respawn and now the cops are after you
3. You don't remember the last meal you had that wasn't a medkit

People Who Changed Computing

Compression Is Key

Think data transmission and Huffman Coding is most likely at work behind the scenes. Digital life would have been very different in



David Huffman

its inventor, David A Huffman.

Huffman earned his BS in Electrical Engineering from MIT. It was during his study here that he was asked to write a paper on efficient coding techniques by his professor, Robert Fano. Fano had co-developed a compression code that came to be called the Shannon-Fano algorithm. Huffman outdid his professor when he produced his paper—his code was found to be better than the one his professor had helped develop! Today, Huffman Coding is implemented in everything from modems to JPEG and ZIP to even HDTV.

After his graduation, Huffman served in the US Navy as a radar maintenance engineer. He later earned his PhD from MIT in 1953. Awards for his innovations poured in, and the last was the Richard W Hamming Medal from the IEEE in 1999. He died the same year.

Besides coding algorithms, Huffman also made contributions in the fields of RADAR, design procedures for asynchronous logic circuits, signals, and properties of zero-curvature surfaces—which led to the concept of computational origami (which uses CAD to determine the various ways in which a material can be folded). Huffman never patented any of his ideas or research: "My products are my students," he said.

Bluff

YOUR WAY THROUGH

TLAs

Bogged down with TDM TLAs in computing? Have no clue what that just meant? We can't give you a decoder ring, but we do run this for your bluffing benefit anyway:

TLA

Well, the mystery needs solving. "TLA" is a TLA that describes itself—a Three-Letter Acronym, bringing the world to its knees with jargon overload.

Usage: "There are just TDM (too damned many) TLAs in the world today."

TIC

A Token-ring Interface Coupler, used in an alternative network protocol, the DIX Standard of Ethernet.

Usage: "My network is intermittent!" "Perhaps you have a nervous TIC?"

APL

C is APL. So are Perl, Python and Java. Asynchronous Pod Layers? Aggravating Pig Lard? Try the more unassuming "A Programming Language".

Usage: "I want a book on APL." "Is that a programming language?" "Yes." (*Caution:* Might cause mind-numbing confusion.)

RDB

Before there was the movie, there was the acronym—Relational Database. Oracle, MySQL, MS SQL Server—all RDBs, sans jingoism and dying people.

Usage: "RDB caused a revolution. In the database area."

COH

Used sometimes in IRC. Every once in a while, we all end up looking at new technology and talking about it like COHs—Cynical Old Hacks.

Usage: "Oh don't bother Kumar with good news, he's just a COH."

Next time you're chatting or reading an e-mail, remember to add these to your vocabulary; for the rest, DEB—Don't Even Bother.

Wild Wild Web

The eBay Department

Ho-hum. Weird eBay auctions are a nickel a dozen, but we liked this one because the auctioneer seems so sincere, it's almost tear-jerking. This in-all-earnest auctioneer offered several things in his listing, courtesy a revelation from Jesus. So anyway, what would the winner win? A *hand-written journal* listing out four "specific things," as follows. (Whatever happened to good old downloadable copies?)

1. The cure for cancer. Some detail is warranted here—"CANCER OCCURS WHEN WE EAT OUR OWN FLESH. (*His caps; we aren't shouting.*) Two very simple examples of eating our own flesh are biting our cuticles or biting our lips. When a piece of our own flesh is digested, microscopic fragments of our own DNA enter the bloodstream..." Nuff said.

2. The precise location of heaven.

3. A solution for world peace: something to do with America being the guardian of the world and all that.

4. Know the future: "If world peace is not achieved before 2021 the world will destroy itself. ..."

Virtual Outrage

If you're a little in the fog about what MMORPGs are, skip the following. A contingent of ten thousand virtual Chinese folks recently protested against a virtual motif resembling the Japanese "rising sun" flag atop a virtual Chinese government building. The understandably agitated protesters were avatars in the online game *The Fantasy of the Journey West*, hosted by portal NetEase. One placard read "NetEase, you have even hung out the sanitary napkin." Dirty, dirty. Poor Engrish, too.

<body> <spirit>

Your Web site isn't getting as many hits as you expected. Naturally, it's not spiritual enough. In other words, your earth-bound HTML code doesn't have the spiritual touch. It's

all about Feng Shui and Vaastu, of course.

SEO is passé; Indian cybermystic Dr Smita Narang has it all worked out in her book *Web Vaastu*. In this must-have-for-webmasters is advocated the use of *Vaastu Shastra* and Feng Shui to create harmony between the five elements of nature to rope in



Rising sun

positive energies to the aid of your site.

We're terribly sorry we wasted your time with our *Fast Track* that detailed, in a shamefully inorganic way, how to build a Web site, and we hope this bit of news will show you The Path.

GIT YER MITTS ORF

US Gov't Gets Rap On The Knuckle

Every time Uncle Sam sits up and snatches ownership of the Internet, proclaiming his responsibility to keep it clean, there is little that anyone can do but watch and perhaps make a guarded joke or two about it (*you* try crossing swords with the most powerful country in the world). But when the National Telecommunications and Information Administration (NITA) took a survey to see people's attitude towards ICANN as the Internet's governing body—their contract will end on September 30—they were in for a nasty surprise.

Out of 305 (valid) responses, an inspiring 197 effectively asked the US Government, "Who made you the boss, anyway?" They insisted that the US review their self-appointment as the ultimate authority over all things online, and move towards a more global Internet where other countries can play too. The general consensus is that there shouldn't be a UN body, rather a consortium of global organisations capable of acting swiftly.

One sore point that triggered this indignation was the refusal of the .xxx domain, something the ICANN has been criticised for repeatedly. Finally, then, some admission has been made that the Internet is indeed a global body and belongs to people in other parts of the world too (a fact we've always known the Americans to overlook).

Sadly, though, everyone agreed that till such a thing happens, the ICANN should continue its ~~reign of terror~~ democratic administration of the Internet. So basically, despite all objections, the Yanks control the world till someone else gets up and does something about it. Volunteers, anyone?

WE'RE ALL GOING TO DIE!

Women To Fare Better Against Robots

Proponents of the male side of the gender war have something to feel mighty worried about right now. Ian Pearson, noted "Futurologist", claims that when the robots come (and

come they will), they will first take over the classic male jobs—stuff that requires “intellect”—like programming. Machine intelligence is going to replace male intelligence, leaving the latter sitting in front of the idiot box drinking beer in a world of automation. (Wait... was this supposed to be bad news?)

Safer in this Rise of the Machines will be people in professions that require “soft skills”—Public Relations, Human Resources, Nursing, and so on—professions traditionally female in nature.

While the impression is quite clear—that the Pearson creature lives in the Stone Age and can generalize cacti and roses and call them the same—there is perhaps some reasoning here. Machines will, no doubt, automate mundane tasks in industries like manufacturing (something they’ve been up to already)—tasks that, statistically, more men do than women. It isn’t going to be that easy for women, either. Less Human

Geek Dreams!

July was certainly entertaining! We got the Xbox 360 for an exclusive review, and boy were people fighting to be the one to review it. Nimish (fatbeing) won the battle, but was perhaps wishing he hadn’t. Everytime he sat down to play with the Xbox 360, something or the other cam up, and our editor Deepak whisked him away for some work—leaving the rest of us laughing away to glory. Multiplayer racing was the highlight for the next week.

If the 360 wasn’t enough, we finally got our hands on the Intel Conroe as well. Michael was the lucky one chosen to test this monster. He’s already applied for a personal loan to buy it!

We have a new writer on board as well: Samir, who joined us this month, was a little taken aback

at first with all our craziness. In all fairness, it is a little hard to walk in the first day when the *Digit* team is in “issue-closing” mode. If all the gaming and screaming of expletives (when a race on the Xbox is lost) is not overwhelming enough, being told by the editor that you have 4 stories this month, and just three days in which to submit them, should do the trick.

To his credit, he took it well, and as we write this, is getting pointers on how to powerslide in *Project Gotham Racing* and which buttons do what for the Xbox 360. We think he’ll fit right in!

Oh, and we should tell you that our Editor officially hates the Xbox 360—because at least four writers missed their deadlines because of it. He’s probably going to be the only one happy to see it go!

DIGIT DIARY

Resources naturally translates to less Human Resource Managers, so really, nobody’s safe. The EU, apparently, is worried about this Impending Doom—nobody wants to see a bunch of unemployed men running about. They have, though, maintained an icy front and perhaps

Pearson would argue that they’re just acting tough.

Right now, though, the statistics poke holes in what would otherwise be a cheesy yet enjoyable “apocalyptic future” movie—while manufacturing jobs have indeed been decreasing, jobs in the services sector

all over the world are increasing for both men and women. What about the future, though? Well, seeing as how we’re going to have more time on our hands, we could orchestrate elaborate plans to overthrow the little buggers and claim our jobs back. ■

Blog WATCH

The revamped, Digg-like Netscape, as well as Firefox, are popular topics of current discussion. The Mac Pro, too, figures in this month’s list of blog picks

Michael Arrington

<http://snipurl.com/augt2> (www.techcrunch.com/2006/07/19/huge-red-flag-at-netscape/)

Huge Red Flag at Netscape

Netscape, which recently relaunched as a Digg-clone, wants to pay those top users to switch over to them. Jason Calacanis, who runs the Netscape property, wrote a post earlier today offering to pay top Digg users \$1,000 a month or more to switch to Netscape and submit news there instead.

I have a couple of observations on this. Netscape has a massively larger audience than Digg, but has absolutely failed to impact Digg growth at all...

Jeff Jarvis

<http://snipurl.com/blogaug5> (www.buzzmachine.com/index.php/2006/06/22/the-adman-and-the-ice-age/)

The adman and the ice age

Well, actually, I think the internet is potentially the most capitalistic force yet invented, empowering the individual and the small business to control their fates and their value.

It seems that Sorrell is defining capitalism as buying up ever more companies, since that’s what he does. But that, I say, is not the essence of the free economy. The individualistic anarchy—the free marketplace—of the internet is much purer.

The internet is not a socialist collective. That’s not to say that we do not end up acting in collective ways. The internet enables societies to form as well, even when they don’t know it—that is, when the data about our activities shows, after the fact, that great minds think alike. Still, the wired are not pinkos.

Chris Messina

<http://snipurl.com/blogaug6> (<http://factoryjoe.com/blog/2006/07/13/browsers-the-future-thereof/>)

I don’t get where Firefox is going. I don’t think it’s going anywhere actually. I think it’s strong, it’s stable, it’s a great platform. But it’s not innovative. It was a response to IE and now IE7 will come out, co-opt everything that makes Firefox great or interesting...

Tanya Klowden

<http://snipurl.com/blogaug4> (<http://arstechnica.com/journals/apple.ars/2006/7/1/4622>)

Mac Pros likely to sport Woodcrest, possibly Conroe as well

Intel’s had a busy summer, pushing highly anticipated chips out like they were new iPod models, and while those chips are certainly off to do some terribly interesting things in interesting little boxes, some of those chips are destined to live life inside a Mac. The only problem? We don’t know for certain which chips they are, yet!



July 2006

Pornography Woes

The *Fast Track to Web Design* was marvellous. I can now develop PHP pages very easily. The July issue was amazing—it was more informative and had fewer ads. And the article on online pornography was great. I now understand that we never control pornography. I think sex education should be started in the 11th grade, so that our teenagers can understand what they should and shouldn't do. This is the best work by *Digit* on online pornography.

Anand S Newasekar

I wrote this letter because of the July story, "Do you know what children are exposed to online." I'm very happy that you have written about this topic as it is a matter of concern for everyone. I think the Net really is the sleaziest place in the world right now, while being accessible to almost everyone. I am a student and have dial-up at home, though my future children will probably enjoy a 24x7 broadband connection. I don't think installing content-blocking software is the solution, because none of them provide complete protection. So, while pondering over this issue I have come up with a solution that may be practical:

Let's have a toolbar that only an administrator account on a computer can install, which children or other users will not be able to uninstall or disable. In an online community effort, everyone should have this toolbar. After registering on the toolbar's site using an e-mail address and password, they can then mark all sites that they come across as clean or objectionable. This way a central database can be maintained and added to.

If this is done, in a couple of years we may be able to find all the sites with adult content and block them!

I think breakthru.com is doing a good job to combat spam.

Mubashir Zahoor Bhat
Anantnag, Kashmir

Dear Anand and Mubashir,
We're glad that you and a lot of other people understood the stand that *Digit* decided to take in trying to pry open the eyes of the public, and force them to see that such things will not just go away on their own—not talking about it is only making it worse.

As far as sex education is concerned, it needs to start at home, and not done as dispassionately as it is in schools and colleges. Also, with the younger generation being more technologically inclined than the older one, trying to stop kids from viewing porn online is almost always going to fail.

Mubashir, your idea, though unique, is not the solution, because adult sites are multiplying by the minute, and blocking all of them is next to impossible. The solution is to accept the fact that if our children *want* to view pornography online, they *will*. What we have to make sure of is that they aren't scarred emotionally by it, because porn is their only source of information on the subject of sex. Take away the taboo that is associated with the subject, and all of a sudden it's not an adrenaline rush anymore! That's the approach most of us at *Digit* wish to take... We thank you for standing up and being counted, and raising your voices on this subject—unlike most of the people we approached for this article, who heard the words "sex," "pornography" or "adult Web site" and closed the door on our face!

— Agent001

Bouquets For The Fast Track...

Your *Fast Track to Web Design* was a mind-blowing presentation, and I have rejoiced at its presence with this month's *Digit*. I do not have words to thank you for this remarkable addition to the *Fast Track* series, which I think is a super hit element in your magazine. Keep up the good work.

Nirmalendu Mukherjee
West Bengal

I have been reading your magazine for more than four years now. Your new technology guide, "Fast Track", has been very useful for me from the time it was launched with the March 2005 issue. It has been a really handy and useful companion thus far. I have to say that

the choice of the topic in each fast track has been improving with every issue.

The debut issue covered Digital Photography—a gem of a topic, considering that very few IT magazines have ever covered this topic. I am thankful for your Mobile Telephony issue as well, because I took that as my seminar topic for my final semester in MSc Physics, and all my professors loved it. Your April issue's *Fast Track* was all about Linux—and since my MSc project was on Linux Scripting, that helped me a lot as well. You've done it again with Web Design—I was looking forward to learning the basics of PHP, and *Digit* has helped me yet again!

Thanks a lot for the master brains behind such a great idea, and do continue to update us in IT. It seems that *Digit* is my "mind reader".

Kelvin Ralph

Dear Nirmalendu and Kelvin,
I am glad that you liked our *Fast Track* books. Thanks for your feedback, and we promise to keep it just as interesting, if not more.

— Executive Editor

...And Brickbats For The Couriers

I was really surprised to see that my first letter to you was published, and instead of the article on Digital Audio, you gave an entire *Fast Track* on the topic! Kudos to you for that!

I have been very happy by the prompt responses from your helpdesk, on several occasions, but I cannot say the same for your subscription service, which is your Achilles Heel! Most ardent readers like me end up as subscribers for mainly two reasons. First, it's the ease of having *Digit* delivered to you, and second, in the vain hope of getting the magazine on a priority basis. You must realise that we subscribers receive our copies much later than newsstand buyers do. I saw this month's (July) edition on the stands on July 1 itself, but my issue normally gets to me by the 10th of the month. You guys must make it a point to give your subscribers, your most important customers, the issues before they get to the news stand.

Please take up this matter seriously, and satisfy your most loyal customers!

Praveen Premchandran

Dear Praveen,
I know that subscriber copies sometimes reach

Write to the Editor

E-mail: editor@thinkdigit.com

Snail Mail: The Editor, Digit, D-222/2, Om Sagar Building, MIDC, TTC Industrial Estate, Nerul, Navi Mumbai 400 706

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Inbox

LETTERS
OF THE
MONTH

late, and to tell you the truth, the perfect solution to this still eludes us. We have always been at the mercy of couriers. With the rains causing even more problems, June, July, and August have always been the worst months for us.

With newsstand copies, we hand them over to distributors all over India, who then send it to all the newsstand dealers and booksellers. Their network is so organised, and competition between them so strong, that almost all newsstand dealers pick up their copies personally from distributors. There are even fights over who gets delivery first! Added to this is the fact that they don't have to hunt for addresses, and deliver multiple copies to one location, and you can see why it's that much faster. We've changed couriers several times, and found that even the largest companies just cannot compete with the aggressiveness and efficiency of our newsstand distribution network. We're still looking for a way to at least match them, if not beat them. We'll try and minimise the time difference between newsstand and subscriber copies reaching their destinations, though.

— Executive Editor

Missing The Mac

I was a keen *Digit* reader for many years, until job changes meant that I couldn't keep up the habit for the last couple of years. I am from a non-IT background (I'm a CA + MBA), but was very popular whenever any computer glitches came up, which I attribute to my large collection of *Digit* magazines, CDs and DVDs.

I have been in London for quite some time now and will be returning to India next month. I want to share my apprehensions about picking up another copy of *Digit*. This is because in my years here in London, I have discovered Mac OS X. I had heard about it being mentioned in your magazine, but having used a Mac, I can say that it has a feel and use completely unrivalled by Windows. I am in touch with a lot of people in India, and see that the Mac is catching on there. I was wondering if you, at *Digit*, are also on the bandwagon and provide information for the Mac user.

If the Mac is not well fairly represented, I would like to be another, if not the first, person to ask you to include more information on the Mac in your magazine.

Rajat Sharma

Dear Rajat,
We will be the first to admit that we haven't really covered the Mac platform in *Digit*, and

that is mainly because of a lack of demand for such content. We have also noticed the number of people with Macs grow, and with Intel getting into Macs, and ways and means of making the Mac OS run on PCs and vice versa (although not exactly legal) coming out, we will be looking at an article or two on this topic on a more regular basis. For now, we're starting to include Mac-related software on our DVD and CD. Let's hope the demand increases, and gives us an excuse to cover the platform in more depth.

— Executive Editor

Hurrah For Open Source

Thanks for the fabulous magazines and *Fast Tracks*, I am a proud *Digit* subscriber. I have a question. Recently, the Lucknow Municipal Corporation decided to switch over to open source software from the earlier Windows-based software. They say the licensing fees and cost of software prompted this decision—they reportedly spent Rs 19 lakh only on software this year. Thus my question: Why is everybody not doing the same? Are Windows and closed source software worth that price? Look at me—even after buying original Windows XP Pro, I spend a third of my bandwidth on automatic updates, with an infinite number of patches to download all the time. Shouldn't all of us give Linux a try?

Udayan

Dear Udayan,
The problem that open source software and operating systems face is acceptance. There are misconceptions about the security of open source, the services offered, etc. However, it must be said that closed source software developers reportedly provide prompt customer support, which is essential for large companies. For home users, however, this should not make a difference, and the reason for lack of implementation in homes is the learning curve, or unlearning curve—you'll have to stop thinking of computer usage in the way Windows works, and learn how Linux and other OSes work before you can reach the same comfort levels. With the level of piracy in India, people generally choose closed source software because of the familiarity, and the fact that it comes to them "free" anyway! Stricter punishments for piracy will surely see the penetration of open source increase.

— Executive Editor

Pay, Don't Pirate

Most of us Indians are pirates, and some of us are tomorrow's potential customers. But the buying options are not available widely in India. Most of us Indians don't have access to credit cards or PayPal accounts, and can only buy products via demand draft or cheque. *Digit* can easily solve this problem by selling the most common software such as Windows XP, Norton Antivirus, Microsoft Office, etc. You can also create income or commission from the software vendors by acting as their distributors or retailers. People like me will definitely buy software from you. It will also help in decreasing piracy. Surely a person who subscribes to *Digit* for a year or more can easily buy full versions of software.

Amandeep Singh

I read the two letters related to piracy in the July issue. Though the opinions were quite influential, I feel it's better to use open source or free software rather than using keygens and cracks and pirated CDs. The fact is, one doesn't know how effective the paid software is (for example, a crippled spyware remover) until you pay for it. And who knows, you might have already been fooled by the interactive interface of the software and the list of spyware shown by it in order to make you pay for it. I have been using Spybot S&D for around a year, and have found it to be the best, even better than Spyware doctor. OpenOffice.org is almost a twin of Microsoft Office; Opera and Firefox are better than Internet Explorer, and free. Quick Heal, Avast, AVG, etc., are better than some paid anti-virus software.

The point I am trying to make is that open source or free software are as good (if not better) as the paid ones. The only difference is, you need to search for them on the Net or on the *Digit* CD and DVD. Still, if people prefer unlocking crippled-software through keygens and cracks and live with the guilt of doing something illegal, that's their choice.

Kumar Pratik Patna

Tabloid TECH

People And Events That Grabbed Headlines—For Better Or For Worse

Of Billionaires And Beds



Überst-Googlers Page and Brin can't seem to agree upon what kinds of beds have a place in their Boeing 767 corporate jet. They were fighting about it like little children. There was some legal stuff involved which we didn't understand, but the crux of the dispute was whether or not Sergey should have a California King Size bed in the jet. Eric Schmidt had to make the decision: "Sergey, you can have whatever bed you want in your room; Larry, you can have whatever kind of bed you want in your bedroom. Let's move on."

There's more—and it's appallingly puerile! Schmidt referred to the corporate jet as a "party plane" in legal documents. Larry and Sergey wanted things like hammocks and cocktail lounges in the jet. And also nubile young women feeding them grapes! No, we made up that one!

Now every billionaire loves fun and has whims, but tch, tch: inseparable pals bickering over beds. And letting the tasteless news spill out onto searchable pages.

Pod Potato

We're bored to death with news that links iPods to well-known international figures: they all own one of course, and there's one bit here about someone preferring pink pods and one bit there about someone using the damn thing while taking a crapper. Even then, it's our solemn duty to report.

This one's about one Lazy Luddite Lad called Justin Timberlake. He's so lazy, he can't download music onto his

pod. He doesn't *know* how to. So he asks his cousin to do it for him.

Acceptable: (a) Indolence; (b) Learning Disability; (c) Being techno-challenged. Unacceptable: (a) Inability to handle music while being a pop superstar; (b) Needing the help of a woman (aforementioned cousin).

But you've got to hand it to him for having revealed he can't do what even Blonde Bimbo Britney probably can.

Geek Goddesses

Spashed in much of the news this month was the IT Screen Goddesses Calendar. Here's an in-exclusive report. The calendar features women from the IT industry (yes, there are some) posing sexily. You'll see female GMs and service centre managers posing as the bikini-clad Ursula Andress in a certain James Bond movie, and as the enticing Mena Suvari in the rose-petal scene from *American Beauty*.

Spot the odd word out: "sexy," "bikini," "provocative," "sensual," "information



technology." The prize: the aforementioned calendar! (No, we're kidding. It would cost us \$19.95 at www.itgoddess.info, and we can't afford it.) Anyway, if you guessed "IT", you're right. The idea is, the women who posed for the calendar did so with the noble intention of shaking off the industry's geeky image, and encouraging young women to consider careers in computing.

"Statistics show us that one of the biggest barriers to entry is the perception of the industry," said one of those who posed. You can guess all the rest: (whine) "Why don't women get into IT?" (moan) "There's a lack of female talent in the industry!" (grrr)

"It's a man's world!"

Forget the digs, and what you have is some people trying to promote IT and computers as *not* geeky. Are we cranially challenged, or may we ask what, then, is geeky?

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