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## Build

Solar powered lamps |  
Twitter apps

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Inside ATI's Evergreen |  
Get a career in security

## Compare

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cell phones

## Play

Battlefield: Bad  
Company 2 |  
God of War 3

# The GREEN DREAM

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going green Pg. 44

ALL OF US WANT TO **SAVE THE PLANET**,  
AND WE'RE HERE TO TELL YOU **HOW YOU**  
**CAN GET STARTED**

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for under Rs 1,000 Pg. 49

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**MOBILE  
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TESTED



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**THE TOUGHEST CHOICE YOU'LL  
EVER MAKE...**

**Tips & Tricks:** Opera, Buzz, Sea Monkey & more | **Agent 001** hunts for smartphones



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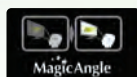
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LCD Monitors



# Go green today



Robert Sovereign-Smith  
Editor

**“One of the biggest mistakes people make is to think that going green is something only the rich can afford to do”**

In this space, over the last two months I’ve challenged you to improve yourself. Although a lot of you might feel that this month’s challenge is tough, personally, I think it’s the easiest one of all thus far.

Digit’s coverage of the whole “green” issue in the past has usually focussed on what social organisations, corporates and governments are doing to save the planet. We’ve stuck to that in the past because we thought it was the only way to include “technology” in everything we wrote about. Digit is committed to improving our lives – usually through technology. However, we’ll stray every once in a while, if required, to get an important enough message across.

April 22, 2010, is the 40th anniversary of Earth Day, and no matter who you are – old or young, male or female, geek or amateur – the planet is something we should all care about. It is, after all, the only one we’ve got. That’s a message we felt we just couldn’t ignore. This issue is our attempt to convince you to give a damn for the Earth we all live on, and we’re not going to be talking about corrupt governments, helpless NGOs, technologies that no one can afford, or sit back and shake a fist in anger at the supposedly evil corporations who are killing us with pollution in order to make a quick buck. That would be too easy. Instead, we’re asking you to take a good look at yourself, and see how you can improve your own life.

I see a lot of similarities with our indifference towards the environment and littering. In India, we’re used to making a mess around us. Why? Because everyone litters, what difference would it make if we didn’t? However, those of us who have lived or travelled abroad know that we litterbug Indians magically transform into obedient, civic conscious citizens when in another country, which proves that all we really need is for someone to set an example, and others will follow.

It’s possibly an education problem as well. For example, one of the biggest mistakes people make is to think that going green is something only the rich can afford to do. This misconception arises from the fact that greener devices are usually more expensive. However, if you look at it logically, you’ll soon realise that those same devices work out cheaper in the long run. Yet, bafflingly, in the land of savings accounts and frugal living, where almost everyone seems to start saving for


retirement whilst still in their 20s, too many of us still prefer to buy cheaper, but more power-hungry incandescent bulbs, instead of investing in low-power, longer-lasting CFLs.

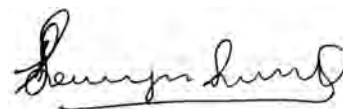
Most of us from the Digit community live in cities, and are avid technology users. What we need to understand about this simple statement is that we’re also contributing a lot more than the average Indian to global warming and other “brown” effects. Something as simple as walking or cycling short distances instead of using motorised transport, or just charging your cell phone using solar energy could work wonders – not just for the environment, but for your own health as well.

Whether you’re saving on power or fuel, or nurturing and planting trees, going green will benefit you in very measurable ways. You’ll save money, live healthier, and even be happier. Most of what you’ll read in this issue will help you do just that, but there’s more.

It’s not just about changing what you do, but also what you buy. All of us know that every PC, laptop or gadget we buy is made from silicon, plastics and metals that are mined, purified and manufactured using processes that can scarcely be called environment-friendly. So should we all stop using technology altogether, and go back to the good old snail mail days? No, of course not, but we can choose to find out more about the companies who we buy products from. Even if it means spending a little more, I’d rather buy a product made by a company who follows strict norms, and even goes that extra mile to try and offset the damage they’re doing to the environment.

We’ll play our part and keep feeding you with regular articles to help you identify newer ways to go green. However, we also want you to tell us what you’re doing, no matter how small you think your actions are. We’ve even started a Facebook page for this very reason.

Go to [www.facebook.com/ithinkgreen](http://www.facebook.com/ithinkgreen), and either get some interesting ideas or give the Digit community more food for thought. Of course, you can also use our forum ([thinkdigit.com/forum](http://thinkdigit.com/forum)) to discuss topics such as these with Team Digit members as well. 

  
editor@thinkdigit.com



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## Disclaimer

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

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fly E 106	Creative T6100
fly MC 160	F&D A310
g-Fone 345	F&D A520
g-Fone 565	F&D F6000
g-Fone 588	FGD V 620
g-Fone 351N	FGD V520
Intex IN 2020 E	Intex IT-10500FM
Intex IN 4420	Intex IT-2600
Intex IN 4477	Intex IT-5400FM
Intex IN 5030	JBL Creature III
Intex IN 4410	Logitech Pure-Fi
Nokia 1209	Anytime
Nokia 2700	Logitech Pure-Fi
Nokia 3110	Mobile
Nokia 1662	Logitech Z523
Olive V-G200	Logitech Z-5500
Olive V-G8000	Mitashi PH-106
Olive V-G2300	Mitashi PH-12T
Samsung B2100	Philips SBD7000
Samsung C5130	Sony SRS-D511
Samsung Metro	Sony SRS-DB500
S5200	Sony SRS-Z50
Videocon V1305	Tech-Com SSD-
Videocon V1306	1800FM
Videocon V1402	Tech-Com SSD-
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ZTE GN281	Tech-Com SSD-

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Altec Lansing BXR 1220	Tech-Com SSD-6000R
Altec Lansing BXR1221	Zebronic ZEB-S2100
Altec Lansing FX2020	Zebronic ZEB-SW2400
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USB iML237	Buffalo WHR-HP-G300N
Altec Lansing VS2620	CorbyPRO B5310
Altec Lansing VS4121	Dell Inspiron Mini 10
Artis S222	ECS Elitetgroup Black
Artis S5555-USB	Series A890GXM-A
Artis X-15	ECS P55H-A Black
Audioengine A2	Gigabyte
Creative Gigaworks HD50	GA-890GPA-UD3H
Creative Gigaworks T3	Intel i7 980 Extreme
Creative Gigaworks T40 Series II	Lian Li A71F
Creative Inspire T3130	Novatron NTD38
Creative Inspire M2600	NZXT Sentry 2
Creative Inspire S2	Sony Ericsson Satio
Creative Inspire	Sparkle GTX 285
	2 GB
	Zebronic Audiophile
	5000
	Zion 4 GB DDR3

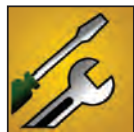


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Remember to include full system configurations in your mails



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Our very own secret agent will give you the low down on what to buy, from where, and for how much. Send in all your buying advice questions to the coolest agent ever. [agent001@thinkdigit.com](mailto:agent001@thinkdigit.com)

## Crack the Code

Crack the Code contest winners announced on page 116. The solutions are at [www.thinkdigit.com/ctc](http://www.thinkdigit.com/ctc), for those of you who couldn't crack our code



## I THINK GREEN

Join the revolution, share your green secrets, learn from others, save our planet, and win exciting prizes while you're at it. What more could you ask for?

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- StrongDC++ 2.40
- Core FTP Server 1.0 build 334
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- Comical 1.0
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- DriverEasy 1.0.5
- System Explorer 2.1.1
- Fresh Diagnose 8.34
- MyDefrag 4.2.9
- OpenWith View 1.11
- QuickSYS Informer 2.0
- Wise Disk Cleaner 5.01
- BatchRename Free 3.52
- Disk Space Fan 1.4.2.796
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- Farm Commander 1.4.36

## Media

**LECTURES, WHITEPAPERS, SDKS, NOTES AUDIOBOOKS AND MORE RESOURCES**

- GPU Programming Guide
- TED videos

For more test results of the speakers test, go to

[www.thinkdigit.com/d/1004\\_speakers](http://www.thinkdigit.com/d/1004_speakers)

## Games

**GAME DEMOS, INDIE GAMES AND FREWARE GAMES**

- Order of War: Challenge
- War Rock 20081102
- Iron Grip: Warlord full client
- Unreal Development Kit beta 3
- Dungeon Defense
- Whizzle
- Upshift StrikeRacer 1



## Casual Games

- All Out Race 1.1
- Motocross The Force 964
- Urban Brawl free game
- The Hunt 1.1
- Programcreator Monster Killer
- Starport
- Bontago

**ALSO CONTAINS SPANKING NEW GAMING HD TRAILERS, INCLUDING 4 CRYISIS 2 TRAILERS, DEUS EX: HUMAN REVOLUTION AND BRINK.**

## HTPC Distros

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- Element OS

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breaking down the barriers of technology

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The iCharge Eco is a portable solar charger with support for a wide range of devices. The iCharge Eco is built around a lithium polymer battery and a 10W solar panel. The iCharge Eco is a portable solar charger with support for a wide range of devices. The iCharge Eco is built around a lithium polymer battery and a 10W solar panel. The iCharge Eco is a portable solar charger with support for a wide range of devices. The iCharge Eco is built around a lithium polymer battery and a 10W solar panel.

**Mavizen TT02**

The Mavizen TT02 is a high-performance motorcycle that packs a punch. It's not just the power, but the way it's used. The TT02 is a high-performance motorcycle that packs a punch. It's not just the power, but the way it's used. The TT02 is a high-performance motorcycle that packs a punch. It's not just the power, but the way it's used.

**2010 Lexus LS 600H**

The 2010 Lexus LS 600H is a luxury sedan that's as eco-friendly as it is stylish. It's a luxury sedan that's as eco-friendly as it is stylish. It's a luxury sedan that's as eco-friendly as it is stylish. It's a luxury sedan that's as eco-friendly as it is stylish.

**Callender Designs Soliloquy**

The Callender Designs Soliloquy is a unique piece of art that's also a functional device. It's a unique piece of art that's also a functional device. It's a unique piece of art that's also a functional device. It's a unique piece of art that's also a functional device.

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**SIX LINUX DISTROS INSIDE**

**4-port broadband wireless router**

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## Industry Connect

We speak to HCL, Gigabyte, NEC, AMD and NVIDIA on green computing trends and approaches

## Buzz

Google TV, Airtel's 2 mbps plans, Steam coming to Macs, Ubuntu's latest beta release and more.

✉ I have been following Digit for the last 5-6 months, and I find it the best tech mag in whole of India, compared to others. However, one of the primary reasons for which I buy Digit is the FastTrack. Its an awesome and unmatched supplement. No other mag in India can ever compete with it, or rather with Digit itself. This month's FastTrack is equally fantastic as was others like FastTrack to wireless technologies, mobile phones, and open source. It is itself a concise encyclopedia. The main mag is also great. I enjoy reading all the articles; but the news on the top are excellent. The feature story YOU 2.0 was pretty nice, along with Developer Corner, Geek Life, Dark Web, How Stuff Works and all other sections and articles. This issue's LCD Test was very helpful to me as well. In a word, Digit Rules and Rocks. I would like to thank Agent 001's work (his articles are sometimes funny). But, I have a complaint as well. In this month's mag, to the reply of a reader, you wrote that Dark Void's demo isn't available, but another mag gave away Dark Void's demo in their this month's DVD.

Can you please provide older FastTrack issues in E-book format in your web site? Please consider my request. Also, can my Nokia 5130 XM (firmware version 7.95) support 4GB memory cards? One thing you guys should keep in mind that other mags are also upgrading their mags to nearly the same level as Digit. I don't want any mag to surpass you guys; always keep a long distance. Again, Thanks for the great magazine every month (I wish, if you can, publish it everyday!)

Samrat Naskar

✉ Thanks for writing in. We missed out on the Dark Void demo, and we'll keep an eagle eye out from now on for interesting demos. We do offer the past FastTrack issues for sale on our web site, but not in e-book format. The Nokia 5130 XM is a great phone, and supports SD memory upto 16GB, so 4GB should not be a problem at all. Thanks for writing in.

Aditya

✉ I am a new reader of Digit. I bought Digit only because PCWorld has stopped its magazine (and I'm really hurt). For the past three months, I've been trying Chip and Digit,



trying to zero in on the book to subscribe. Still, I am not completely new to Digit, since it was the magazine of my preference before PCWorld started their issues in India. My thoughts regarding Digit are as follows:-

- Digit is the best-"selling" technology magazine in India (And I sure don't know how it was possible),
- The content that you offer on your DVD isn't thorough and not up to my expectations (Am I too authoritative here?). It would help to reduce the emphasis on no-name products and shift focus to big-name things, even though it might hurt some of the smaller software providers. But still, I like it better than Chip, but for PCWorld, you've got to improve.
- The magazine content is good, especially the first few pages which contain excerpts from interviews with people. But I have one suggestion here too. I

rarely come across a software review in Digit, which is one big reason that my attention turns to Chip. So please include more software reviews. Also, you're reviews are coming a little too late, like the review of the Philip NC headphone in this issue.

I really apologize if I was harsh anywhere. I just want a good magazine to read. So, I think you'll get better with time. Please consider software reviews seriously. They are serious deal-breakers for me, and may be for many others too.

I also have a small doubt. In the early days, I remember Digit and Chip to be some sort of partners, because the CDs in my collection show that both Digit and Chip issued Playware and Mindware media.

Shyam S

**From facebook.com/thinkdigit**

**Sagnik Banerjee** Hi, I am currently living in U.S. I have a Subscription of DIGIT for 3 years, which started around July 2008, and is valid. I know the magazines are being delivered regularly to my india home. But is there a way, to get those magazines out here?  
March 18 at 10:22am [Comment](#) [Like](#) [Report](#)

**Vakul Kumar More** Even I would like to know about the same  
March 18 at 4:12pm

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**d** We want our readers to expect the highest standards from us. We do on occasion review software in the Bazaar section, but most of the time we cover software in the Toolbox section. We feel it's better to tell you how to use the best software, rather than tell you which software is second or third best at its job. Digit was started in June 2001 by the same company that used to publish Chip until May 2001.

Robert

**✉** Kudos to Team Digit for the last month's issue, it surely had my clogged gears in the brain running in no time. It's been a pleasant journey for me. Your FastTrack to Photography last year just changed my life. After reading it, my knowledge and perception of photography has greatly increased. Thanks to you and your team my photographs were twice chosen by the National Geographic for their Daily Dozen and one of my photographs were aired on NDTV Goodtimes.

I'm sure no one can beat you, when it comes to interaction with readers, content on the mag or in the DVD. I have read other mags as well but didn't find the warmth or the guidance, that I find in your mag.

Unfortunately for me, my subscription ends this April and I will not be able to renew it because after my 12th boards my address will keep changing and it will be difficult for me to lay hands on the mag. Keep up the excellent work Guys and I can't wait for the June issue, as I share my birthday with the Mag. Again, thank you for everything.

Utsav Nath

**d** It is great to know that you are putting our FastTracks to good use. Congratulations on your photos being selected. Copies of our magazine are commonly available on news stands. Best of luck for your studies.

Rossi

**✉** I want to know if there is any possibility that I can buy your old issues, since sometimes I don't have the money to buy your mag as in this month, I can not purchase your book due to shortage of money. I love technology so, I love thinkdigit.com, your mag is really

## LETTER OF THE MONTH

**✉** I bought my first Digit magazine back in 2005 in the month of October. That time I was just 12. The images which were present in the magazine forced my dad to buy a new PC. More than 4 years have passed I am still reading Digit. I haven't subscribed for it yet but I haven't missed out a single issue. Digit helped me a lot in many ways.

The guy who didn't even knew how to use Windows OS's (Pirated) now uses an Open Source Operating System's. Digit helped me to use my PC in a right manner. Digit keeps me busy in front of my PC around 6 hours a day. All those Shopping Guides and Product Reviews helped me to help my friends for buying their new.

I don't have enough money that I can subscribe to your magazine in a go. In the past I missed a lot of Special Editions of your magazine. But I don't miss them anymore. I walk around 6kms for saving Rs. 5 a day. So this makes Rs. 50 for 10 days. And I get rest of the money from my dad.

I share my magazines with all my friends. I have also given some magazines to my school library.

I like the DVDs you provide. I have got a huge collection of Open Source software's. I am also having Linux Applications which you have provided in the DVD. I don't need to search and download those applications from the net.

I also like the Fast tracks that comes in the pack. It's really helpful. The Fast Track on Open Source and Maya 2010 (Tutorial) were really Great which you gave in August 2009 and January 2010 respectively.

The Brand New Show "Digit TV" has become my favourite show and I haven't missed its single episode.

The "Crack The Code" contest was amazing. Hoping for some more like this

The You 2.0 article was really impressive. I have installed those add-ons which will keep me away from social networking Sites and I am also using that Sticky notes Applications.

You guys rock. You have done a lot of hard work for making Digit my favourite subject. So hats off to you.

Abhishek Dutta

**Abhishek Kumar Dutta** A Conversation between my dad and me yesterday

**Me:** Dad woh digit pe 50% paise bachao offer chal raha hai. Subscription lagv dijiye naa.

**Dad:** Hmm.. "Exam me 90% and above laao phir lagwaa doonga Digit kaa Subscription"

**Me:** What??? Dad this is injustice. Aapko pata hai ki mujhe exams me 75% r upar kabhi nai mile...

**Dad:**...

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March 18 at 10:35pm [Comment](#) [Like](#) [Report](#)

**lig** Digit You are only asking for 50% of the money you would have spent otherwise. Maybe he can offer you a 50% discount on the marks expected ;)

March 18 at 10:47pm

**Abhishek Kumar Dutta** nice one!!!!!! ..... LOL

March 18 at 10:53pm

*From facebook.com/thinkdigit*

good in all terms. This is the first tech magazine I am reading but believe me, I am in love with it. My love started with your mag back in October 2008 when I first purchased your mag from the Lucknow railway station.

Since then I missed so many of your special issues. If there is any way I can purchase your old issues then please inform me so that from next time when I miss any issue I can buy the same when I have the money.

Suraj

**d** You can always pick up the previous issues from [www.thinkdigit.com/cart.php](http://www.thinkdigit.com/cart.php). One tip we can give you is to pick up the December issue of every year, as the DVDs contain the PDFs of all the issues of the year. Many of the team members were readers before we started writing for the magazine, and we have picked up the magazine from strange places. Second hand book shops were good hunting grounds. You can also spot boys selling the magazines in trains at subsidized rates after the month has passed by.

Team Digit



**Gnutella turns ten**

Justin Frankel created Gnutella ten years ago; he is also the creator of Winamp

**Nokia 3310**

It was one of the most sold phones ever; 126 million of them were sold since its launch in the year 2000

# Google TV coming soon

**Google, Intel, Sony and Logitech working to bring the web to the living room**

If you are a Google fan, you may have more reasons to celebrate in the coming months, as three giants – Intel, Sony and Logitech – have proposed to team up with Google and launch Google TV and set-top boxes on an Android-based platform.

The platform intends to seamlessly integrate web content and online services like Twitter, Youtube, online games, web apps and the formidable Google search. It will also integrate a lightweight browser for light surfing activities. Google TV will run on set-top boxes built with Intel Atom processor running the Android operating system. Google TV technology will also be implemented on Blu-ray drives and Sony TVs along with keyboard equipped remote control feature in partnership with Logitech.

With all the blueprints for the project in place, The Times has indicated that Intel and Logitech have advertised job listings for programmers with Android experience. Google plans to deliver a fully functional technology product rather than a product with cosmetic design value. The field of television is an uncharted frontier for Google. But, Google sounds optimistic about its project plans and let's hope they deliver the integrated power of the web and television as part of this project.

Source: Thinkdigit.com

## Counter-Strike cheater stabbed

Playing CounterStrike was never very friendly, with the cutthroat competition from across the world for the #1 multiplayer FPS ever. But things in a small town in the Jilin province of China seem to have gone too far.

A cyber cafe was filled with young gamers checking their e-mail and a game of Counter-Strike was being played. Some youth, possibly from the same clan, noticed another player cheating, using a *wall-back* that allows you to see through walls. The cheater did not realise he was being watched.

A fight ensued, that soon moved outside and resulted in the cheater being stabbed through the head with a 30 centimetre knife. He remained conscious and was transferred to the hospital by ambulance where doctors began to operate immediately. He is reportedly out of danger.

## ThinkDigit.com hunts for the fastest browser

It's been a long argument between fan boys of all sides – which is the fastest browser? Thinkdigit.com did a test recently to find just that. In nearly all tests, Google Chrome was a consistent high-performer. Opera 10.50

WIN EXCITING PRIZES



**Digit's Facebook Apps Contest**

What you learn from this Fast Track could win you Rs. 20,000 in exciting prizes. Take part in Digit's Facebook Apps contest by going to

[www.thinkdigit.com/d/fb\\_contest](http://www.thinkdigit.com/d/fb_contest)

wasn't too far behind either, we can definitely say it's "one of the fastest browsers till date" – excelling in some aspects and keeping a good record for all facets. Still, it's not the fastest. Safari performs admirably, which is to be expected since it shares a

core with Chrome. Some may find it lacking in the user experience it offers. Firefox enjoys a healthy market share but it did not fare as well as it ought to. Unless Mozilla Firefox intends to be happy being just ahead of Internet Explorer 8, needed, in most of the tests, some things to change. Luckily there are some good signs of just that...

In terms of resource utilisation, the result varied significantly. Google Chrome is a behemoth in terms of runtime footprint, and even Safari doesn't play well at this. Opera 10.50 is a more balanced proposition here: it comes with moderate processor and memory usage (comparable to Firefox) but gave good results (comparable to Chrome). Internet Explorer 8 may be the most resource-friendly browser of them all – but we've all seen how it performs.

Opera 10.50s claim for being the "fastest" is not very far from the truth. If you go by numbers though, Chrome wins. If there is one concrete conclusion to take away from this test, it's that Internet Explorer 8 is the worst performer.

For the entire test, and to post comments, visit [http://www.thinkdigit.com/Internet/The-hunt-for-the-Fastest-Browser-on\\_4223.html](http://www.thinkdigit.com/Internet/The-hunt-for-the-Fastest-Browser-on_4223.html)



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## uTorrent popularity dropping

The latest version of uTorrent has been facing some criticism over unfairness in their new protocol called uTP

## Youtube captioning

Youtube uses voice recognition to enable auto captioning feature for all English videos



From left to right, Gautam Anand (Google), Lalit Modi (IPL) and Shailesh Rao (Google) announcing live streaming of IPL matches on YouTube

## Airtel provides 2Mbps connections for cricket

India loves its cricket, and Airtel understands this. From March 12th to the 25th, Airtel Broadband customers enjoyed speeds of 2 Mbps no matter their plan while streaming content from YouTube's IPL channel, [www.youtube.com/ipl](http://www.youtube.com/ipl). These speeds were provided by Airtel on a best effort basis. Users were able to stream with their Airtel Broadband connections. Tariff plans stayed the same however, and data transfer limits too.

Around the same time, Airtel also upgraded some of new broadband plans. Most plans have the speeds doubled. The new 4 Mbps plans are now available for between Rs. 899 and Rs. 1,799 but with download limits between 6 GB and 50 GB. The plans are named "Impatience".

## Nintendo 3DS – Glassless 3D experience

Nintendo has announced a 3D successor to the Nintendo DS line of handheld gaming

devices, tentatively called the Nintendo 3DS. According to claims by Nintendo, the video game console will feature "3D


effects" that can be enjoyed "without the need for any special glasses".

Since technology for such a feat is not yet available, it can be safely assumed that Nintendo is sitting on a golden egg, one that will keep other portable gaming consoles lagging even further behind. Further information about the new Nintendo 3DS will be revealed by the company at the E3 event this year, which starts June 15th in Los Angeles. The new Nintendo 3DS will also be backward compatible with the Nintendo DS and DSi.

## Steam coming to OS X

Steam is a game distribution service by Valve that is some-

thing of a hybrid between a cloud based service and a desktop client. Games can be purchased, downloaded and then updated using the Steam client. Steam was primarily available for Windows so far but now, Valve is working on Mac OS X version.

This was close on the heels of the March 5 announcement by Valve on the upcoming release of Portal 2. Valve's popular games such as Half-Life 2 and Team Fortress 2 are likely to be the ones available for Mac OS X in April. With the various platforms available, this may be a case of too little too late for Mac users who are interested in gaming. We say – better late than never! 

## We talked to Sanat Rao, Director of Developing Markets, Intel Corp.


**In many ways bringing processor "intelligence" to everyday objects seems obvious. What were the challenges getting to this point? And what are the challenges moving forward?**

The Internet is bringing transformative changes to the embedded world. The era of intelligent connectivity for everyday objects has started and will pick up pace rapidly. According to a recent IDC study, there will be 15-billion devices connected to the Internet by 2015, most of which will be embedded devices. These products require chips with high-performance; at the same time, the devices require a small form-factor and low thermals, thereby implying a higher level of integration. With our embedded Atom family of processors, we are now able to achieve all of the above.

**With processors come complexity, and that brings device failure or breakdown into the picture. Would we need to reboot our fridge and install more RAM along with defrosting it? How do you design everyday "intelligent" equipment we rely on, to not fail?**

This is an excellent question. It all boils down to software; today, a refrigerator or a washing machine doesn't really require an operating system, because it is a single function device



with specific hard-coded functions. The moment you connect these devices to the Internet, there are a host of new functions these devices can perform. The key is to make sure that the device has a robust OS. In addition, hardware assisted manageability features are a major factor in keeping these device up and running. For example, Intel's vPro technology allows a device to be remotely managed from an external location, independent of the state of the OS. So a refrigerator manufacturer could conceivably run a remote-management center to support all the "connected" devices that have been deployed. 

Read the full interview online at [thinkdigit.com/d/intel\\_interview](http://thinkdigit.com/d/intel_interview)

# Do you have what it takes to be a

**Here's your chance to get featured in Digit's anniversary special in June 2010, and become a part of Digit's history**

## What is Digit Idol?

Digit Idol is our way of celebrating members of our community. The idols will be announced in June 2010 – the month that Digit enters its tenth-year of publication. We have various ways in which we plan to felicitate the winners, but more on that later.

## Who can apply?

You should be a member of one of our many communities – a reader of Digit magazine, a member on our forum, a Facebook fan, a Twitter follower, etc. If you're interacting with Digit and are using what you learn from Digit, you're eligible. It's that simple.

Whether you're our youngest member, or our oldest, or even if you have the largest collection of Digit magazines, you might have what it takes to be counted as a Digit Idol, and we would love to hear from you.

There's no single criteria. We know the diversity of our community. Winners will be chosen in a number of different categories.

## How do you apply?

You can apply via email, on our web site, and even send us snail mail.

### Web (Preferred)

Just visit [www.thinkdigit.com/idols](http://www.thinkdigit.com/idols) and fill in all the requirements to complete your entry there.

### Email

Send an email to [ids@thinkdigit.com](mailto:ids@thinkdigit.com) with the following as attachments:

- 250 words (max), about why you should be named Digit Idol.
- A photograph of yourself, and up to a maximum of 3 photos displaying your passion
- Your full contact details, (phone number, address, etc.)
- Your readership status: Subscriber, news stand, forum member, Facebook, Twitter, etc.

### Snail Mail

Send everything listed above for email entries, but in hard copy, to: Digit  
The Editor, KPT House, Plot 41/13, Sector 30 | Vashi | Navi Mumbai 400703 | India



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## What's in it for you?

Apart from the adulation of your peers you mean? Read on:

- ★ Be featured in the Digit's Anniversary issue and win awards
- ★ Be featured on Digit TV!
- ★ Model for Digit advertisements
- ★ Be invited to the Digit Community Advisory Council
- ★ Get published in Digit



**ISO 14001**

An environmental management system released by the International Organisation for Standardization

**2005**

According to NASA, 2005 was the warmest year since the availability of reliable measurement systems

# The green channel...

We contacted companies to get a feel of their contribution to the environment. This is just a snapshot. We initiated dialogue with many more, but very few responded. Some companies were eager and proactive in talking about their green initiatives. Others, despite bragging about their achievements, shied away from responding. The following were the responses we received.

## HCL Infosystems Limited

### What's HCL's stand on going green?

#### How high on your agenda is it?

The duty of protecting and preserving the environment has to be shouldered by one and all. HCL Infosystems takes pride in being the first Indian company to have ISO 14001 certification in manufacturing and also RoHS compliance in our complete range of desktops and notebooks.

#### Does HCL use renewable power?

Yes, we use renewable energy sources like solar energy. This year, we plan to double the amount of renewable energy as compared to last year.

#### What are the most significant changes HCL has made over the past year to go green? What are your future plans in the same direction?

We use Spot Air Conditioning in our manufacturing unit. This approach to cooling concentrates the cool air at heat generating points/areas only, hence reducing energy consumption.

#### Is it cheaper or more expensive (in the long run)?

Consumers as citizens of the earth are sensitive to environment and we are already seeing a shift in attitude of the consumers when buying. Going forward in the long run green products will have an advantage as far as sustainable value-for-money is concerned. From a long-term perspective, going Green makes our systems more efficient and sustainable, hence offsetting the initial cost.

#### Do you have any special drives to encourage your customers to go green and recycle your products?

HCL Infosystems initiated 'Green Bag' campaign where people come and discard their old IT equipment like computers, keyboard and printers in an environment-



George Paul, Executive Vice President, HCL Infosystems Limited, 6400 employees globally

friendly way through all the HCL Touch centres. HCL Infosystems has also set up an eWaste helpdesk to support computer owners with help/resolution of any problem faced during disposal process by sending an email to ewaste.safe@hcl.in.

#### Have you made changes to your products as part of your green initiative?

We recently have launched PVC-free laptop in the market. The eco-friendly ME notebook has been designed and manufactured with materials completely free of harmful chemicals like Polyvinyl Chloride (PVC), a hazardous toxin, absence of which makes recycling of electronic products safer and environment friendly. Elimination of PVC would bring down exposure of poisonous chemicals reducing risks to health and environment. Also, our products comply to the latest Energy Star 5.0 specifications.

## Gigabyte

Rajan Sharma, GM, Sales and Marketing, Global employees: 3000+ (45+ in India)

#### What's Gigabyte's stand on going green? How high on your agenda is it?

Going green is an endeavour on which we had our eyes set right from 2006-07 RoHS

compliance agreements. We strive towards ensuring that our customers get green and affordable technology and meet the broader goal of protecting the environment.

#### Does Gigabyte use renewable power?

Yes, we use renewable power in our manufacturing plants and factories.

#### What are the most significant changes Gigabyte has made over the past year to go green? What are your future plans in the same direction?

We have launched green and energy efficient motherboards with EES & DES technologies to help desktops consume less power. GIGABYTE has made a concerted effort to produce motherboards that use the least amount of energy possible without sacrificing performance.

#### Is it cheaper or more expensive (in the long run)?

Adoption of green technology will definitely help in the long run. With the rising cost of energy and its increased consumption at every level, conservation and optimization strategies are increasingly important to overall profitability. For example, the amount of power which customers can save due to our G41/H55/P55 motherboards is almost equal to cost of the product, used over 3-4 years life-cycle.

#### What were your 2009-2010 spends towards this, and is the allocated 2010-2011 budget higher or lower?

Our R&D is constantly working towards maximizing goals and conserving and designing products that help make green technology effective.

#### Do you do anything special to get customers to recycle?

Yes, we work closely with like-minded companies to achieve this objective.

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## Global warming

The increase in the average temperature of the Earth since the early 20th century

## Kyoto Protocol

Adopted on December 11, 1997, it is a protocol to the United Nations Convention on Climate Change

### Have you adapted products as part of your green initiative?

We have reworked our PCB and hardware designs to incorporate Easy Energy Saver and Dynamic Energy Saver (DES) in our products. The DES can adjust voltage, power phases and clocks speeds of the board and CPU to ensure as little energy as possible is wasted while providing as much power as needed.

## NEC India

### What's NEC's stand on going green?

In 2003, NEC formulated the NEC Environmental Management Vision 2010, which states our commitment to reducing NEC's overall net impact on CO2 emissions to zero in 2011. Our "Real IT Cool Project" is a series of activities and programs for developing technology, products, and services aimed at reducing the power consumption of customer IT platforms and sharply reducing CO2 emissions from IT devices.

### Does NEC use renewable power?

NEC has a 3-R policy that stands for Reduce, Reuse and Recycle of used electronic equipments. We have an exclusive 'take-back' policy where it takes responsibility for the products it has created. Also, we have an ongoing Reforestation Project, where NEC plants a tree for each PC received from a customer.

### What has NEC changed this year to go green? What about the future?

Other than our 3R policy, NEC has gone a step ahead and extended its Green IT initiatives to its vendors by launching "Green Purchase" project through which it collects data about the ingredients (particularly toxic substances) used in the parts and raw materials it buys from its suppliers.

### Is it cheaper or more expensive (in the long run)?

Clearly in the long run it is more cost effective to go green. It helps in bringing down production cost by ensuring zero waste materials, reduction in usage of chemical substances and bringing about production innovation to drive lower TCO. There

is a significant impact on logistics and product shipment. Overall the benefits of promoting green IT through not just product development but also following it as a part of the culture of the organization helps us become more energy efficient by using less power, paper and conserve energy.



Rajiv Bhalla, Country Head - Sales & Marketing, NEC India. More than 1, 40,000 employees globally

### How much did you spend last year? Will it be more this year?

Improvements are in the form of planned introduction of highly efficient energy-saving equipment, substitution of chemicals like PFC and HFC, and introduction of elimination devices. These activities convert into the reduction of approximately 4,30,000 tons of CO2. Moreover, due to the sufficiency and thoroughness of assessment at the development stage, the impact of reduction in CO2 emissions through providing IT solutions has increased to a significant 1.89 million tons.

### Do you encourage your customers to go green?

NEC's web site contains an extensive range of information on the company's environmental activities. This information is updated regularly. Further, highlights of activities undertaken in each fiscal year are also available in NEC's annual environmental reports.

### Have you changed your products in any way to be more green?

"Eco products" are ones that meet all of the 29 eco standards independently

established by NEC from the viewpoints of global warming prevention, resource recycling, environmental consciousness, etc. Moreover, NEC calls eco products that feature the industry's highest level of environmental soundness "Eco Symbol products." The NEC Eco Symbol is part of an in-house labelling system to help promote the development of environmentally sound products and to provide customers with environmental data on products.

## AMD

### What's AMD's stand on going green?

Increasing energy efficiency of our products is one of our top priorities and we are incorporating green aspect wherever possible. We believe in efficiency without compromising on performance or functionality.

### Does AMD use renewable power?

Apart from designing energy efficient products, our facilities are designed and operated in an efficient way. Our efforts were recognized when we secured LEED Gold certification for our new Lone Star campus in Austin, Texas and Dresden fabrication units (now a part of GLOBAL-FOUNDRIES) for powering them with ultra-efficient tri-generation plants.

### What are the most significant changes AMD has made thus far to go green? What about next year?

AMD as a company is making strides to provide more energy efficient computing through its next generation microprocessors and various other computing initiatives. Previously, computing innovation emphasized only speed and performance. But today, computer manufacturers and buyers need a total solution – incorporating performance and energy-efficiency.

### Do you comply to green certifications such as ISO 14000?

All AMD owned and operated manufacturing facilities are certified to the International Standards Organization's 14001 standard for Environmental Management Systems.

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## Warming controversies

There is a section of the scientific community that believes global warming is a result of natural phenomena and not due to the rising concentrations of environmental carbon dioxide

## Leapfrog Technologies

Leapfrog technologies are a sustainable approach to progress, where the latest technology is not delayed in reaching the world population



Vamsi Krishna, Senior Manager (Technical) AMD India, 10,300 employees globally

### Is it cheaper or more expensive (in the long run)?

One of the short-term benefits would be low running cost. With low power consumption, these servers would emit less heat that results in low cooling costs. Looking at the long-term is the realization of data centres return on investment (ROI). Above all benefits comes the responsibility.

### How much did you spend last year, and is this year's allocated budget any different?

AMD is making significant R&D investments to develop energy efficiency products, however we cannot disclose details.

### Do you do anything special to entice customers to go green?

Saving costs isn't the only driver for investment in Green IT. Today going green is one factor that every CIO keeps in mind. Every technology provider is talking about technologies that are friendly to environment. This results in a positive change in attitude of IT managers when we talk about green.

### What changes have you made in your products to be more green?

All latest products from AMD feature the latest energy efficient technologies making them more energy efficient without compromising the performance.

## NVIDIA

Tonie Hansen, Senior Manager, Corporate Social Responsibility, 3000+ employees globally, 45+ in India

### What's NVIDIA's stand on green?

#### How high on your agenda is it?

Being an environmentally-conscious company is important to NVIDIA as it's an opportunity to partner with our employees and customers to decrease our collective carbon footprint as well as improve the efficiency with how we operate as a company and engage with our supply chain. Our three focus areas for having a positive green impact are: campus operations, supply chain and product design.

### Does your company use renewable power?

We have evaluated renewable power alternatives such as solar and fuel cell, but at this time we have not made a commitment to incorporate them into our energy mix.

### What are the most significant changes NVIDIA has made this year to go green? What about the future?

Our most significant change in the past year was the addition of a LEED (Leadership in Energy and Environmental Design) Platinum Data Center in Silicon Valley. In the future, we will continue to evaluate opportunities to make our buildings, products and data centers more energy efficient.

### Do you comply to green certifications such as ISO 14000?

Yes, we are ISO14001 certified for our largest campus in Santa Clara.

### Is it cheaper or more expensive (in the long run) for NVIDIA to go green?

We have found that most green initiatives require an upfront financial commitment but the pay-back is usually very short and in the long term the ROI is better than a less-green alternative.

### What were your 2009-2010 spends towards this, and is the allocated 2010-2011 budget higher or lower?

We're unable to share our budget for green investments. Budgets are integrated into regular business operations.

### Do you have any special drives to encourage your customers to go green and recycle your products?


Our Quadro business unit offers a take back program for clients who purchase large quantities of our technology. The technology is donated to the NVIDIA Foundation, which partners with non-profit partners use it for educational initiatives.

### How different is the agenda (for all of the above) of your India operations when compared to global operations?

All our offices are expected to maintain full legal compliance at a minimum and work towards incorporating continuous improvement in their environmental programs. We look at all of our larger sites with an eye towards improvements in energy efficiency and decreased waste. One of the key successes to NVIDIA's global green program is to give employees a say in the green improvements they'd like to make to their offices.

### Have you changed your products in order to be more green?

In an effort improve battery life in notebook computers, NVIDIA has launched Optimus, that intelligently senses when the GPU is not being used, and shuts it down to increase battery life, allowing consumers to enjoy longer computing time, and improving the life of the battery overall.

Data center intensive businesses have benefited from our Tesla technology. The power of the GPU means companies use fewer computers while getting increased performance, which cuts down on energy. Similarly, Tegra, has a low power management architecture for ultra-efficient power consumption across all use cases. 

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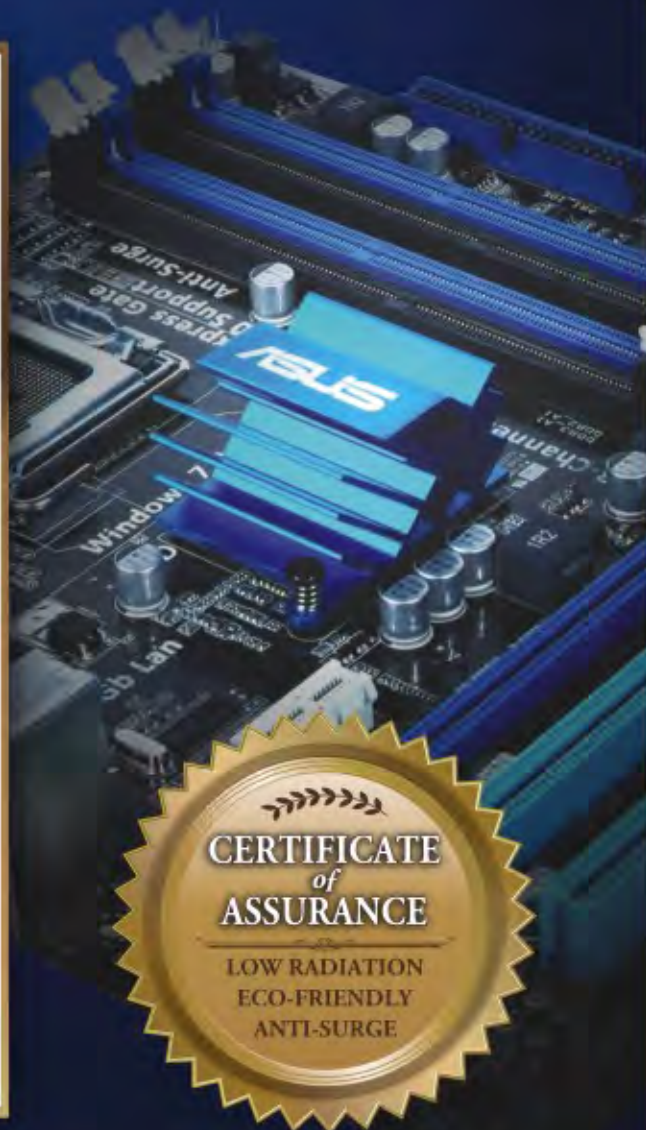
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### Green Chevron

Chevron has just installed some 7,700 solar panels at a site in California to conduct tests

### Fishing for fog?

People in Lima, Peru are using fishing nets to catch fog as a method to combat the water shortage



## Green wheels

**Chetan Maini is one of those rare people who get to live their dreams. As a young boy growing up in Bangalore, cars defined his world. At 39, Maini is setting automotive benchmarks for the world to follow**

As told to Shreyasi Singh  
*readersletters@thinkdigit.com*

I was always putting things together. It was something I loved doing. Maybe the practice of taking things apart helped. My parents tell me even today that when I was very young, I broke everything, and when I got older, I fixed everything.

My love for motors began early. I started out by making remote-controlled cars and planes. In my teens, I was building motorised go-carts. Since specialised components were hard to come by in India, I would ask my dad's friends to buy spare parts when they travelled abroad. By 11, my

bedroom was too small for my hobby. I remember spending my weekends and holidays looking for electronic parts and designing motor mechanisms. School science fairs were a big deal for me.

Every boy loves his cars. But, my parents really nurtured that interest. My father ran a small electronics company then. When I wanted to build a radio in class four, he sent over one of his employees, an electrical engineer, to help me with it. In class six, I learnt how to model planes with the help of my uncle, a navigation instructor with an airlines company, and one of his students who was an aero modeller. The family network fuelled me.

The Lamborghini Countach is something I grew up dreaming about. I drive two Reva cars now, and enjoy all cars, but I have always had a soft spot for the Countach.

I studied mechanical engineering at the University of Michigan, where I was a member of the solar car team. We won the GM Sun Race in USA in 1990. It was here that the idea of a cost-effective electric vehicle, for city driving, first struck me.

Dr Lon Bell, a friend's father and a technologist, was my early mentor. After winning the GM Sun Race, my solar-car buddies and I had started talking about a company in the electric vehicle



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## UK green bank

The UK govt. is all set to launch a three billion dollar bank to help Britain go low carbon

## Reach for rechargeables

Many people continue to use disposable pencil cells, when shifting to rechargeable batteries would be much cheaper and greener

Entrepreneurship

space. Dr Bell loved the idea and started Amerigon Electric Vehicles (AEV) in California in 1991. I worked with him before joining Stanford University for a masters degree in mechanical engineering. After I graduated, I went back to work for him full time. Over the years that I stayed there, I helped develop and design electric and hybrid vehicles.

In 1994, I started work on Reva as a joint venture between the Maini Group, founded by my father, and AEV. The first car rolled out in 2001. A lot happened in the interim. While I was in the US, in 1997, California did not mandate the regulation that would have made sure that 2% of all vehicles sold in the state would have to be zero-emission vehicles. The decision spelt doom for the electric vehicle space. I was sure that the Reva would not happen now. But my family would not let me give up. They pushed me to go ahead with the plans. Things, however, were not that simple anymore. I could not be just a technologist. I had to chase financial organisations for money and had to become an entrepreneur. Reva was a big emotional and financial commitment for us.

Our first assembly plant was clean and green. The design was a challenge since everything had to be low on investment, yet flexible. We used the "rolling chassis" model instead of the conventional fixed assembly line. Wheels were fixed on to the chassis, which moved from station to station for assembly.

Innovation drives me and research is at the core of every-

thing we do. Reva's first seven years were focused on development. We have more than 10 patents in battery and energy management systems. Reva is a ground-up electric vehicle, not a converted hybrid like other cars in the market. Our new model, the Reva NXR, is built on next generation lithium-ion batteries.

In the last five years, there has been a lot of change. Consumers, governments and automotive players have changed – not just in India, but worldwide. Now, people talk about auto emissions, city pollution and climate change. There are concerns about rising fuel costs and fuel shortage. International summits are abuzz with talks

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and discussions on fuel-efficient technology, hybrid and electric vehicles.

It's actually London that set the ball rolling. Reva went on sale in Britain in 2004 as the



Photography: Gireesh GV

Very Verte, Maini has just set up a new plant in Bangalore, and is preparing to floor the production pedal

G-Wiz. There are over a thousand cars on London roads. The city has set a fine example. Electric vehicles, even tax exemptions, and free parking and charging facilities for car owners. On and off-the-street charging stations have been introduced across the city. Our London story has encouraged other manufacturers. There are now more than 50 EV brands under development across the world.


The Frankfurt Motor Show 2009 was a big high. We were the only Indian company participating there, and showcasing new technology. We launched two new models, a four-seater family car, Reva NXR, and a two-seater sports car, Reva NXG. We got a great response from the customers and the media.

I am excited about all this. Our business model now goes beyond just being electric vehicle manufacturers. We are licensing our technology and have partnered with GM India to bring out a battery-powered version of their Chevrolet Spark. GM

shares our passion for reducing carbon emissions. Also, it has the expertise and ability to develop platforms.

I want to press the accelerator now. Our new plant in Bangalore has a capacity of 30,000 vehicles. It should be ready by the year-end. I want it to be an industry benchmark. It follows the Indian Green Building Council guidelines and our "born green" philosophy.

I believe nothing can stop you if you believe in your idea. I faced a lot of skepticism when I started. People did not take us seriously, and would test drive the car for fun. Then things began changing. In 2006, I received an investment of US\$20 million from Draper Fisher Jurveston and Global Environment Fund to grow Reva globally.

Thankfully, I never wanted to do anything else even when things weren't going well. I don't stay disheartened for long, a couple of hours at most. A good night's sleep and I am determined to go at things again. 

Content courtesy:

**India**

# Simply Smart Sound!!



V 620



V 520



I 224

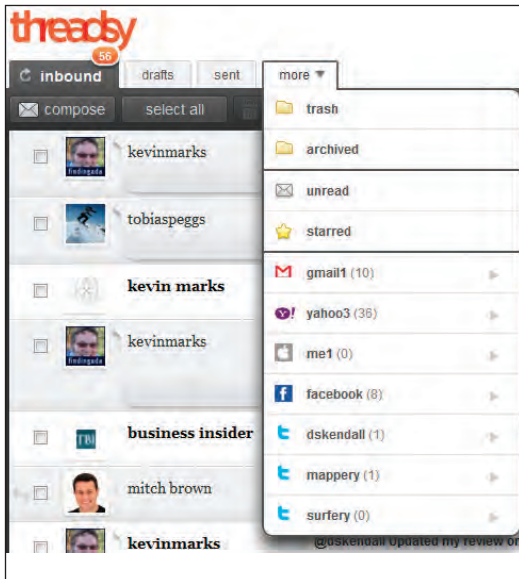
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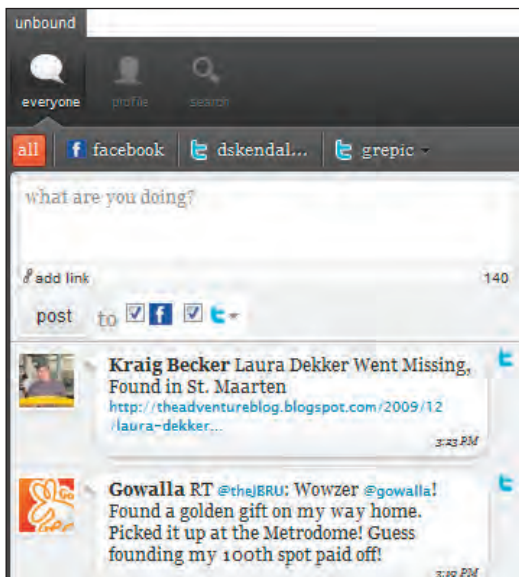


# Get your online life together using Threadsy



Threadsy adds a social context to email, by mixing all your messages together

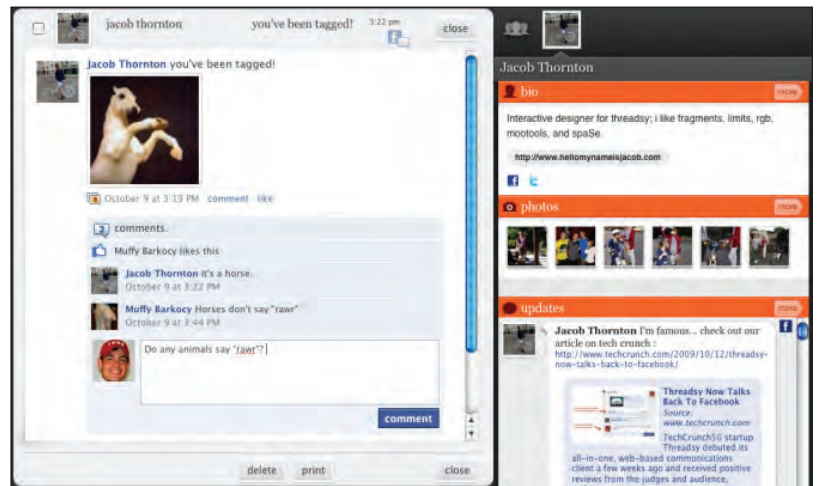
One are the simple days when you could make do with a single email account for all your social connections. Today, if you're not a part of Facebook and Twitter, you're probably missing out on some of the stuff that is going on in your friends' lives. The problem is that you now have too many ways to connect socially, and they



The unbound column shows all your social messages not specifically targeting you

don't all fit together. If you use email today, chances are you have multiple addresses, all overridden with forwards, spam and announcements. You might even have abandoned email altogether, in favour of social networks, to keep in touch with friends and family. Threadsy is a new web service which attempts to salvage this mess by bringing in a social context and relevance to your email inbox.

First and foremost, Threadsy allows you to pull in emails from multiple accounts into one inbox, where you can manage all your messages. Unlike



While reading an email you can see the details of the person you are communicating with in the people panel



[www.twitter.com/digitindia](http://www.twitter.com/digitindia)

**Follow us on Twitter for a chance to win an invite.**

**Threadsy is under closed beta as of this writing, but Digit is giving away invite codes! Follow us on Twitter @digitindia for a chance to get an invite**

the traditional way of forwarding all mails to one account, or using Gmail's external email checking features, Threadsy gives you more control over each inbox separately as well. Adding an email account is as simple as entering the email address and password. If you use either Gmail (or Mail for Google apps), Yahoo!, Windows Live, AOL, or Mobile Me, you are done. You can also add custom IMAP accounts if you use other services.

While email is a central feature of this application, the main premise is to add social connectivity. For this it lets you connect to your Facebook account, and one or more Twitter accounts.

Threadsy divides your communications into two columns – “inbound” and “unbound” panels. The “inbound” column displays all the messages that are addressed to you. The “unbound” column lists all social updates from your connected sites.

Threadsy makes good use of your social data, adding profile images to you email conversations to make the experience richer. As you view an email message from a friend, Threadsy displays all their social data aggregated from multiple sources.



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**Web watch**

## Can You Run It?

**C**an You Run It? – is an innovative search engine – based on an online system requirements checker. It analyses your computer and generates a report within a few seconds providing you with information on minimum and recommended upgrade requirements in order to run the software (games, for example) you have chosen. The

most interesting part is that it doesn't even ask for your personal information, and works fine with windows XP, 2000, 2003, Vista and Windows 7. It is designed to work with Internet Explorer, Firefox and Netscape browsers. However, it is necessary to install the ActiveX/Java browser plug-in in order to enable the functionality of this tool.

### A SNEAK PEEK AT INTERNET EXPLORER 9

**T**he next iteration of Microsoft's Internet Explorer – a browser which is widely criticised, has been unveiled as a technology preview. The only-for-developers download is sure to remind you of what a browser would look like if it was made in the 70s. It just showcases the revamped IE engine (Trident) with little else in its interface.

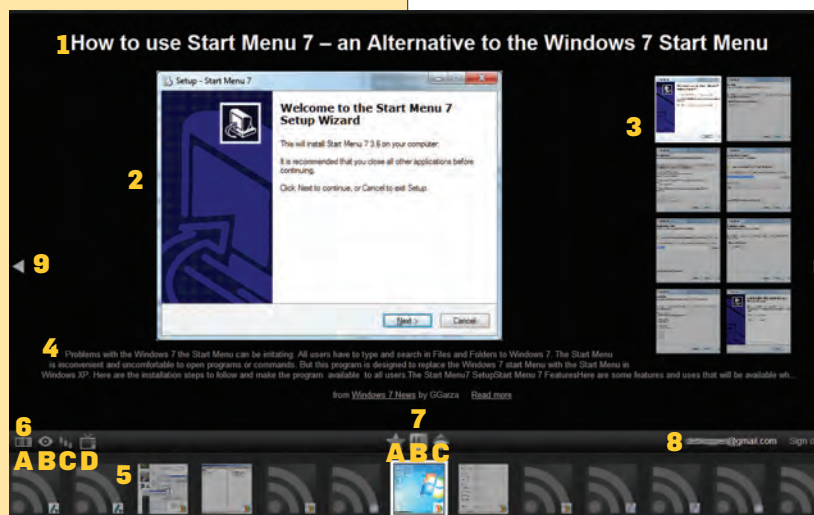
We took the browser for a spin and it seems that Microsoft has finally had enough of the

bashing IE gets for its poor performance. In our tests, the browser managed to beat the latest Firefox 3.6 by a 10 per cent margin! Read more about Internet Explorer 9's performance in our comprehensive Browser Shootout – wherein we pit Google Chrome, Firefox, Opera, Safari and IE against each other to find out which is the Fastest Browser on Earth. Head to <http://bit.ly/aXnGod> to read the two-part feature story.

## GOOGLE READER PLAY

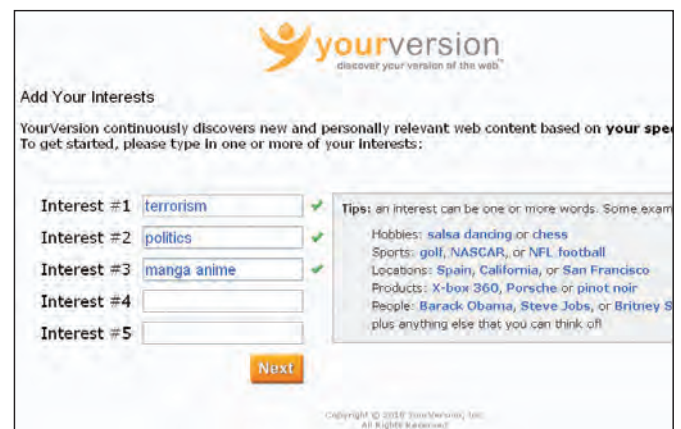
Presenting a new, sleek way to browse your feeds: login to your Google account and navigate to <http://www.google.com/reader/play/#stream> to check it out. Google Reader Player is essentially a different way to view your feeds. Think of it as Cover Flow meets a presentation. Let's take a look at the interface:

- 1 Feed Title,
- 2 Main Slide Image,
- 3 Image Thumbnails,
- 4 Text Contents,
- 5 Feed Thumb-Strip,
- 6 Customisation Options,
  - A Collapse Feed Strip,
  - B Toggle View layout,
  - C Feed Stream Selector,
  - D Slide show On/Off,
- 7 Reader Flags,
  - A Add Star,
  - B Add as Favourite (Like It)
  - C Share This Feed (Article),
- 8 Accounts Details
- 9 Navigation Button



## Your version

**A**collator of personalised web content, YourVersion is supposedly “the best way to discover new and relevant content tailored to your interests”. Searching everything from videos to blogs, Tweets to web sites, and products to news, YourVersion can be your daily source of customised content. Called a “Real-time Discovery Engine” by the company, YourVersion gives you real-time results/updates



not based on any one keyword, but your specific interests. It is also significantly different from an RSS reader because it does not rely on your subscriptions to display content, but instead, compiles content real-time based on your interests.

YourVersion has a simple and uncluttered interface. Simply feed in your “interests” when signing up (you can add/delete new interests at any time), and find your real-time listings of the latest relevant content that is filtered by one or all interests. Have a slow Internet connection? Then click on “Condensed View” for an even simpler text-based listing interface.

You can bookmark interesting content on the site itself, and return to it simply and easily, whenever you want. You can also allow the site to auto-organise pages by interest. Sharing is especially easy on YourVersion, allowing for Facebook, Twitter, and email-based sharing options, right on the listing page itself. You can also give a thumb rating to each article/piece of content.

Other interesting applications of YourVersion are the iPhone app and mobile site, as well as the easy-to-use Firefox toolbar.

The site was launched in September 2009, and has since won numerous awards at prestigious events.



## Made in India

One out of every five cell phones sold in India are from Indian brands such as Micromax and Spice. Mediatek from Taiwan provides the chipsets for most of these. Check out our comparison test of affordable mobile phones on page 84

## Crack the Code

Crack the Code contest winners announced on page 116. The solutions are at [www.thinkdigit.com/ctc](http://www.thinkdigit.com/ctc), for those of you who couldn't crack our code

# Speedy Opera(tor)!

## Opera Mini 5 Beta 2 finally makes it on to cellular platforms the world over

Opera's mobile browser is quite popular with over 30-million people worldwide using it. It recently came out with the Opera Mini 5 beta 2, the latest version for mobile platforms. The user interface has been revamped from Mini 4.2. It claims to give you a similar web experience as your desktop PC. We tried it out and can assure you that this claim is not 100 per cent true.

Opera Mini 5 is a 263 kilobyte file which can be downloaded from <http://www.opera.com/mobile/>. The installation is a piece of cake.

The UI is neatly compartmentalised into various sections like Navigation bar, Address bar, Speed Dial page, Search field. The Navigation bar encloses a tabs button which allows you to have multiple tabs as on a PC. Even the Speed dial page can become a tab. The Tab option makes Internet surfing quite rich.

For Opera browser users, the familiar Speed Dial menu is

a logical addition. It also allows you to synchronise your bookmarks, speed dial settings with the help of Opera Link.

Another addition is the long hold click. This opens up a set of options whenever you hold onto a spot on the page. For instance while reading an article if you click down for some time on a particular word, the browser will open options like Select Text, Copy and Search is just like a right click would be, on a desktop PC. The same goes with links in web pages. Long hold allows you the option to open the link in a new tab.

The Mini 5 works on both non-touch as well as touch-screen phones. We tried it out on a touchscreen phone and the experience was quite something. Features like tabbed browsing and long hold click were very intuitive and it does bring some aspect of browsing on a desktop PC or laptop on the cellular platform. But we found the zoom experience a bit off the mark. Opera Mini 5



Opera Mini 5 Beta 2 on touch-based handsets



This is how Opera Mini 5 looks on non-touch-based devices

has an option to view the full web page, that allows you to select the portion of the page you are interested in reading by double-clicking on it.

While using the Opera Mini 5 on a non-touch phone, we felt that the user experience is not very different. The alignment of menus is slightly tweaked for non-touch phones. For instance the Tab screen has been shifted to the top of the browser screen and the Settings menu becomes a drop-down menu.

When a web page is requested while using Opera Mini 5, the request is sent to a server farm which sends it to a proxy server. This server

renders and reformats the page and converts it into a light and efficient format developed by Opera called the Opera Binary Markup Language. This rendered page is then sent to the client phone. Now since most of these complex operations happen at the server side, it allows the Opera Mini 5 to be used on relatively low-specification phones. The settings menu allows you to bookmark pages, save pages, download and perform other functions in a similar manner as you would do it on the desktop.

Opera has announced it is submitting its Opera Mini browser to Apple for use on the

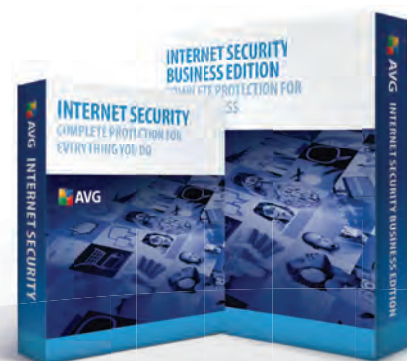


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iPhone. They claim it to be six times faster than Safari. The only problem relating to resizing of web pages due to the pinch gestures will be rectified in the later updates of the browser.

## BlackBerry to have Push notifications

The push notification in BlackBerry phones which was available to only a select few developers is now open to all. This technology allows apps to notify users of any new development in real time. Due to this, the phone does not have to constantly poll the server looking for data, which results in saving battery life. RIM is offering two levels of Push Services i.e. Push Essentials which is free and Push Plus which has a tiered pricing model which will allow developers more content delivery options.

This functionality will prove very helpful for application developers developing for areas that are constantly updated like news, sports, weather, stock prices and other related items. For social networking sites like Twitter and Facebook this is paramount. BlackBerry Push Service software development kit provided to app developers will allow them to implement the push functionality in their apps. Options like point-to-point, multicast or broadcast can be selected based on the need of the app.

Prior to this development, the BlackBerry used a mechanism called polling, where the application actively checked for data. Polling may or may not return new data but it does take a toll on battery life. With BlackBerry push notifications, the applications will not have to check for any data, instead they will receive a notification in real time in case of updates. After

receiving the data, the application can then decide how it wants to process it.

With competitors like Apple and Android, it was only logical for BlackBerry to open up such functionalities to application developers. Only time will tell if this move will spell success for BlackBerry.

## Tegra 2 shows up in India

NVIDIA recently unveiled the next generation of their mobile platform Tegra in India. Tegra was designed primarily as a low-power device to handle high-definition content. With the rebirth of tablets, and the demand for processing power for media content and applications, the Tegra 2xx series seems to fit the gap.



The Tegra 2 chip

The Tegra 250 is made up of multiple processors, each designed to handle HD video, audio and images. 1080p videos can run easily, and support for Flash 10.1 is also present. Long battery life is also one of the promises.

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Two prototypes were displayed at the event, each running Android OS on 7-inch 800x480 touchscreens. One of the companies was developed by Compal and the other

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by EAFT, an Indian company that focuses on entertainment and educational purposes. The EAFT MagicTile has been designed with icons so the interface remains language agnostic. The Notion Ink ADAM wasn't part of the event, but it also uses the Tegra 250 platform.



Watch a hands on video of MagicTile at <http://www.thinkdigit.com/d/tegra2/>

The interesting thing here is the power available to products of these kinds. With lots of Android based tablets coming out and NVIDIA Tegra 2 there to power them, the iPad could face some serious competition. In most tablets, the Tegra 250 is coupled with the dual-core ARM A9 Cortex processor; the Apple iPad uses the single-core Cortex8. Tegra isn't going to be limited to tablets either. With phones, portable media players and HD media players all in queue, NVIDIA's Tegra will pervade the market.

## 3G Auctions in April

India's Department of Telecommunication (DoT) will conduct auctions from 3G spectrum on April 9th and two days after

ices, Etisalat, S Tel, Videocon, Reliance Communications, Idea Cellular and Aircel. BSNL and MTNL, the two state run telecommunication companies already have 3G licenses.

These 3G licenses are expected to cover 22 of the 24 wireless zones across India.

Spectrum will be allotted to three top bidders in 17 circles, while five circles will have four players, excluding state-run BSNL and MTNL. The base price for the all-India spectrum has been fixed at around Rs. 3,500 crores.

As for the wireless broadband around eleven bidders have shown interest namely Tikona Digital, Qualcomm, Tata Communications, Vodafone-Essar, Idea Cellular, Bharti Airtel, Aircel, Spice, Augere, HFCL, and Reliance Communications. Air waves for broadband services will be allocated to two operators in all circles. The base price for the BWA spectrum has been set at Rs. 1,750 crores.

Operators who win the bid will have to pay the entire amount within ten days, although they can commence services only by September 1.

3G auctions have been talked about in the past as well and 3G auctions have been delayed thrice since January 2009 times over disagreements pertaining to the base price, number of licenses sold and bandwidth availability. We sincerely hope that this time around the 3G auctions do take place. **d**

# Surveillance Storage Solutions



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## iCharge Eco

The iCharge Eco is a pocketable solar charger, with support for a wide range of devices. The iCharge Eco is built around a lithium polymer battery and a 100x50 mm solar panel. The charger supports mobile phones, portable gaming consoles and PMPs, or basically any device that can charge up using a USB interface. The chargers are available in six colours. The battery can be charged using a USB interface itself, or a traditional adapter as well. If you are thinking of picking one of these up, you will have to go to Japan and shell out Rs. 4,541.

## 2010 Lexus LS 600H

The LS 600H is the flagship hybrid model by Lexus. The 2010 version of the LS 600H by Lexus does so many smart things to conserve fuel, that you are only allowed to control half the car.

For example, if you accelerate too suddenly, the car does not speed up as much as it should to conserve fuel, and reminds you to drive more smoothly. The air conditioning system also works on it's own, depending on fuel economy and ambient temperature, ignoring any setting that you might key in. Put the car in the Eco mode, and the car adjusts various aspects to maximize fuel efficiency. Unlike hybrid super car concepts, this one is on the streets and you can get one for a paltry US \$108,800 (Rs. 49,37,343) – without the duties that is.



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our home-made  
solar-powered  
study lamp and  
how you can build  
it, on page 49



## Green Indians

The young Indian is green. We spoke to some Indians who made a difference in our society

## Electrolux E-wash goes retro

The Electrolux E-Wash concept washing machine saves water by using soap nuts, a kg of which lasts a year. Soap nuts were historically used in India for washing

Droolmaal



### Mavizen TTX02

The Mavizen TTX02 is an electric-electronic superbike that packs a punch – not only on the streets, but over the web as well. The bike is powerful enough to compete at races and rallies, so this is not one of those electronic scooters you see crawling down the road. The superbike can move itself at speeds of 130mph (209kph), but much more impressive is the fact that it has a dedicated IP address along with a configurable web server sitting inside. You can also get into the bike over Wi-Fi, and even plug in USB accessories. Only 50 models are planned, each customised according to the needs of the buyer. You can pick one of these up for Rs. 16,94,350, and if you crash it, you can use it as a seedbox or something.

### Callender Designs Soliloquy

The Callender Designs Soliloquy is a super-yacht with all the regular features that any luxury yacht should have. However, it is designed in a way to leave behind as small a carbon footprint as possible. The sails are rigid solar panels called wings, and these are enough to move all 58 meters of the yacht at zero emission. Additionally, the yacht also taps into wind and hybrid marine power (HMP) as sources of electricity. That's not all the technology packed in though, there is a touch button control system that reduces the amount of crew on board, affording more space for the capacity of 12 guests.





## Adobe monitors all Flash usage

Every time you use any content that is based on Adobe's Flash, data is stored on your machine and monitored through Local Shared Objects (LSOs) that are similar to cookies. This can be used to track you across Web Sites. You can use browser add-ons to disable LSO.

# On your cyberspace trail

Aditya Madanapalle  
aditya.madanapalle@thinkdigit.com

The Internet was conceptualised as an agent for easy sharing of information between machines and by extension, people. From the very beginning, the standards and protocols used as the foundation of the Internet was geared to promote transparency and easy access to everyone. At that point of time, the Internet was not thought of as a medium for electronic businesses, advertising, or social networking. The increased security needed for these services were added later on, force-fitted over the fundamentally open framework of the Internet. This has led to a situation where a significant portion of our activities online are not as safe or secure as they could be. Web 2.0 services use open APIs to allow for third-party content creation. These can be other web services, or desktop software. The implementation of this kind of third-party content is often independent of any of the policies of the site, unmoderated, and possibly insecure.

Moreover, your activities on-line are valuable information. It serves as a guide for content creators to come up with better, more relevant content, and the advertisers to deliver advertising that you are more likely to respond to. There is a lack of clarity on what kind of data web sites save, but by and large, web sites use a large number of methods to collect as much data as possible. If you have seen prompts on web sites for entering your age, it is not to protect the young

from inappropriate content – instead, it's implemented because of laws that prohibit tracking the on-line activities of young people. There are three primary areas of concern – content providers, social networking sites and malware, including worms and Trojans.

## Analytics and advertising networks

Web Sites thrive on hits, or visits. To encourage traffic to a Web Site, content providers use something known as analytics. Web analytics use a number of approaches to record, measure and track visitor activity. There are a number of analytic solutions, the most common being Google Analytics. It was one of the first services to offer free Analytics, and the adoption rate in the first few weeks was phenomenal. Analytics show unique hits, page views, repeat visits in a month, the amount of time spent on the web sites, which web pages a visitor spent time on, where the visitor came from and where the visitor is headed to, among other things. All of these may be harmless because of the sheer amount of data that needs to be collected. The data collected is often summarised for whoever is using the analytics service, automatically by the

**Web sites and services extensively log user behaviour. The data is used for advertising, improving content, legal proceedings and sometimes, nefarious activities. We show you how the data is mined, how it looks, and what it is used for**

software or web service being used.

The details of what data is collected, and how it is used is hardly ever made public knowledge, and there is no single



The Google Analytics dashboard

regulatory authority to oversee analytics. Organisations and networks that provide analytics services often state that the information they collect and use is “non-personally identifiable”. This is not

entirely true, web analytics providers log IP addresses, and this is enough to identify you as long as the service provider is willing to co-operate. Demographic details, on the income brackets, geographic location, gender and education levels of the visitors are (sometimes mysteriously) available to content providers. This information is used for

## GLOSSARY OF WEB TRACKERS

**Web Bugs:** A web bug is a small, invisible image file (often a 1x1 pixel .gif) hosted on a server, that can be used to track user activity based on who has accessed the file. For example, such an image embedded in a spam mail, can be used to track how many mails have been read, and where.

**Beacons:** An integration of web bugs and cookies, allowing for even more targeted user information to be remotely retrieved by third parties. The most famous example is the Facebook Beacon service, that was discontinued after legal problems and privacy concerns.

**Agents:** Highly specific, and often intelligent monitoring tools that can be designed and scripted to monitor almost any kind of input, and can be run over a network, a web host, or a client machine.

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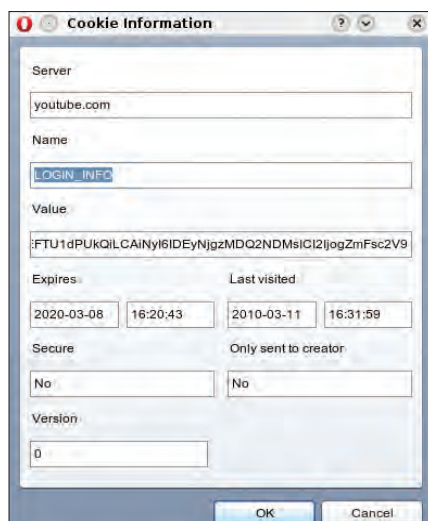
## Is Big Brother Watching?

What about government security agencies around the world? Are they monitoring online activities too? Government agencies don't have enough resources to spare to monitor each person individually. The most common approach is to use software that can analyse a large amount of data, and automatically send an alert if any suspicious activity is detected.

attracting advertisers. However, analytics is relatively harmless, when compared to more intrusive techniques tracking.

Cookies are small files stored on the host computer to record the "state" of a session. This allows web sites to restore surfing activity to a previous point, for say a mail application, or a shopping cart on an e-commerce web site. Most web sites store a number of cookies on your machine, and some of these cookies can be used to track and identify individuals, giving rise to privacy concerns. Web sites are allowed to set "expiry dates" for the cookies that they save. Most cookies are valid for a few hours, a week or a month. A few cookies, however, last for a long time. This example shows a YouTube cookie that expires in 2020.

Most web sites also allow for third



A really long lasting YouTube cookie

party cookies to be saved on the host machine. This means that if site X is showing a banner ad from an advertiser (A), then advertiser A can write cookies onto the host machine, just because of the presence of an ad on site X. Additionally, if A is also advertising on site Y, then A can use the same cookie used on site X. This allows A to track you, personally, identifiable by an IP address, across all the Web Sites that it advertises on. This simulation from Privacy.net shows what kind of data a cookie can record across sessions on different domains. Here, the country of origin, the IP address, a timestamp and

Web Sites Visited for Cookie id="4c5ac3f4f0c3269ee5"

INDIA 59.181.112.187 - March 11, 2010, 05:16:06 - news
INDIA 59.181.112.187 - March 11, 2010, 05:16:08 - sports
INDIA 59.181.112.187 - March 11, 2010, 05:16:09 - politics
INDIA 59.181.112.187 - March 12, 2010, 04:04:06 - news
INDIA 59.181.112.187 - March 12, 2010, 04:04:07 - sports
INDIA 59.181.112.187 - March 12, 2010, 04:04:09 - politics

Clear Profile Clear Cookie and Profile

An example of how cookies are used to track users

the web page viewed is displayed.

Toolbars and add-ons for your browser can track your activities on all the pages you visit, and even go as far as monitoring the cookies that are saved by all these pages on your machine. Google's toolbar does this, something hidden away in the agreement. Google also uses an infamous DoubleClick cookie to track you across all the pages that advertise using Google's ad-sense. Google claims to do this to "improve your online experience, including the display of more relevant ads". Fortunately, you are allowed to opt-out, and disable the cookie by downloading and installing a plug-in available at <http://www.google.com/ads/preferences/plugin/>. The opt-out

approach for disabling cookies, is the de facto standard of the web, as against an opt-in approach, which is more acceptable for privacy activists. This was the major cause for the privacy hullabaloo around Google's Buzz service, as users

facebook

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had to opt-out of displaying their closest Gmail contacts on the new Buzz profile, instead of opting in.

Search engines are also uniquely in position to track and harvest search queries. Services like trends anonymously use such data, but Google maintains

an individual search history of all your searches. If you have a Google account, then all your searches are saved, which means that any potentially embarrassing searches you have made are available for those who want to view it. You can disable this tracking by going to the Search History tab on the main page of Google.

Companies are legally required to monitor and track activities. If you have an e-mail, instant messenger, or a "group" id, then your activities are being monitored in case they are necessary in legal proceedings. Typically, access logs are kept for 60 to 90 days, of every IP address that was used to sign in to an account. A service such as Hotmail is legally required to provide the e-mails

XBOX LIVE IP ACTIVITY REPORT

Activity IP Report for Gamertag:

This report contains usage through Saturday, February 10, 2007

Start Time UTC	End Time UTC	Gamer Tag	Title Name	IP
10/29/2005 08:59 PM	10/29/2005 09:00 PM		Xbox Dashboard	
10/29/2005 09:01 PM	10/29/2005 10:39 PM		SW: Jedi Academy	
10/29/2005 10:39 PM	10/29/2005 10:40 PM		Xbox Dashboard	
10/29/2005 10:41 PM	10/29/2005 10:43 PM		Midnight Club 3: DUB	
10/29/2005 10:43 PM	10/29/2005 10:44 PM		Xbox Dashboard	
10/29/2005 10:45 PM	10/29/2005 10:56 PM		Midnight Club 3: DUB	
10/30/2005 01:34 AM	10/30/2005 05:02 AM		Midnight Club 3: DUB	
10/31/2005 03:36 AM	10/31/2005 04:08 AM		Midnight Club 3: DUB	
10/31/2005 12:33 PM	10/31/2005 12:36 PM		Midnight Club 3: DUB	
10/31/2005 09:28 PM	10/31/2005 10:10 PM		Midnight Club 3: DUB	

An example of an XBOX Live activity report

in the account if a proceeding of law requires it. Logs are kept for multi-player gaming on consoles as well. Shown above is an example of what an XBOX Live activity log looks like.

## Social Networking

Social networking sites have a rich database of individual choices and preferences, but fortunately, the scope of current computational methods to distill this information for commercial purposes is very limited. The approaches that analytics services use to extract useful information from visitor activity on web sites can be used far more effectively on the wealth of information available if user interaction on social networking sites are tracked. Social networking sites have a unique problem

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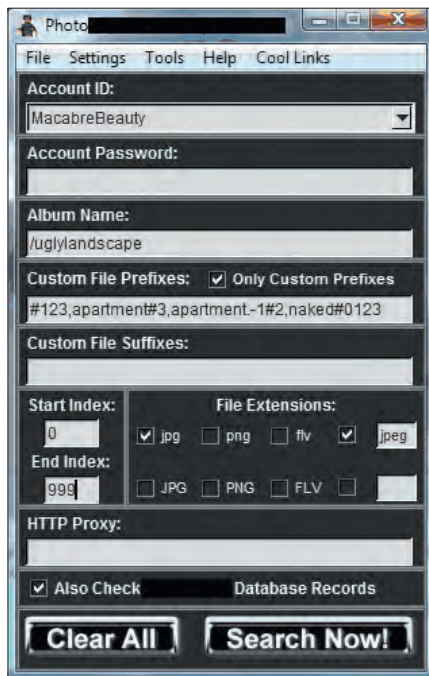
Geek life

of having to provide a service that is both public and private, often letting the users choose a comfortable level. The security and privacy features of even the top social networking sites are full of holes. Social networking sites constantly change their policies, as well as the back ends of their web sites to address these issues. The APIs available for third party content is the biggest concern right now. Applications on Facebook, for example, have access to almost any information stored on your profile, as well as the profiles of your friends. An application developer can easily access this information, and there are almost no regulatory forces that review the activities of application developers. To view a demonstration of the extent to which applications can access the data on your account, and the accounts of your friends, try out the Facebook privacy quiz at [http://apps.facebook.com/aclunc\\_privacy\\_quiz/](http://apps.facebook.com/aclunc_privacy_quiz/). The results are a little chilling, as the app can start displaying images and comments from your friend's profiles as well. Even if you are careful about which applications you allow access to, if your friends use dubious applications, the developers can access your information as well.

Some implementations of the Twitter API allows third parties to host their own applications, on servers that are independent of Twitter. This means that your login details are stored on these third party servers, although you are still using the services of Twitter. Often, the passwords are stored in plain text, and not even encrypted over the network. The developers do not like it, and for some reason, there is no big fuss over this issue yet.

Photo sharing web sites such as Photobucket, ImageShack and TinyPic are monitored by peeping Toms for compromising photos of people. Orkut and Facebook are also targetted. Although these websites offer privacy settings, if the direct URL to a resource is known, it can be accessed. A "fuser" is a software or web service that allows people to search for these images using a pattern, either a file name of a particular kind of camera, or custom tags used by the uploader. This screenshot of a software with a name too obscene to be published, shows a fuser looking for images with

either "apartment" or "naked" as associated text strings in the name, tags or comments.



A feature rich fuser software

### Software Trackers

Cyber Criminals have a number of reasons to monitor your web activity. The best Trojans and worms around now, don't give any visible signs of infection, and are pretty versatile. Many of them are in constant touch with remote servers, that keep changing to avoid detection. Updates and patches are often relayed to the malware. The malware does not need to monitor and send back all the activities on the infected machine. There are two parts to malware such as a Trojan or a worm. One part is the infecting agent, which spreads from machine to machine. The other part, called the payload, is a set of instructions, typically used to send back data. This can be a small, simple keylogger, that monitors, say 12 characters before and after the "@" symbol, then sends it back to the cyber criminals. Even if you don't use the "@" symbol to login, these payloads can monitor every time an alphanumeric string has numbers and odd characters used without spaces. This is enough to send back the username and password to your e-mail. Some of these payloads are advanced enough to peek into your RAM for patterns of data. This

means that if you are infected, and enter your credit card number even in a secure website, the data can be intercepted on its way from your keyboard, and sent to these criminals.

This kind of malware is used for two primary purposes. The most common one is the creation of botnets for spamming. These botnets are easy to detect, very closely monitored, and easy to take down as well. There are another set of botnets used for information harvesting, and financial scams. These botnets are smaller, more focussed, difficult to detect, and very advanced. The botnets have version numbers, and contrary to popular notions, the malware thrives by not spreading as fast as it can. Instead, it thrives by avoiding detection, and allows whoever is controlling the botnet to have a secured environment to work in. The copy protection on the latest version of the Zeus botnet analyses the system, and locks itself to the particular machine. Zeus is used to collect financial information en masse from e-commerce and banking servers. Zeus also collects login details to a wide range of web sites, including Facebook



A map of the Zeus botnet

and MySpace The reach of Zeus is world-wide, and India is among the most infected countries.

Zeus is an evolved form of malware, using many of the same principles as the Conficker outbreak. Even up to date anti-virus software do not detect or clean a Zeus infection. Access to Zeus commands as much as US\$ 4,000 (Rs. 1,80,000), when it is sold on underground networks. The biggest problem is that major security breaches are hushed up and never made public. This is because financial institutions do not want to disclose any information on the extent of the compromise, or the methods used. **d**



## Meet Wanda

If you are using Gnome, press [Alt] + [F2] then key in "free the fish"

## Benevolent dictators for life

A few leaders of the Open Source community are given this improbable title. Slackware creator Patrick Volkerding, and Guido Rossum who gave the world Python are two of them



PHOTOS.COM

**A look at a how open source design ideas that are treating waste as a resource, and neat ideas on useful things you can make with PC components**

# Open design and free culture

**Sriram Sharma**

*readersletters@thinkdigit.com*

**O**pen source is a much maligned buzzword, if you go by an essay written by Richard Stallman (Why open source misses the point of free software). It respectfully corrects Wired magazine author Neal Stephenson, in a cultural critique that stresses on the difference between free and open source software.

What's the distinction? Free software is gives you the freedom to run, study, change, and redistribute code. Open source is well, a buzzword, and a development methodology. There can be specific licensing agreements that limit what can be done with that code, "Mali-

cious features, such as spying on the users, restricting the users, back doors, and imposed upgrades are common in proprietary software"

While the Android OS is free, the services that run on it are not: this came as a rude shock to Android fanboys when Cyanogen received a cease and desist letter from Google for distributing a modified Android firmware that also bundled access to Google apps such as Gmail and YouTube. Running Android on a device does not mean you get access to all applications.

## Curd is open source

Finding low-cost, high value tech products that aren't neutered in anyway is an endless and often fruitless quest.

Part of my anticipation for Android has to do with my love-hate relationship with Apple – I like my iPod Touch, which came as an engagement gift, but if it weren't for Windows and IBM, my family would have not been able to afford a PC when it did.

As a veteran tech journalist, it feels sinful to support products that are expensive, incompatible, and full of proprietary software and connectivity screwups. iPods won't work without iTunes, and transferring videos is a pain. But it's amazingly fast. I was able to tap and see around a hundred photos in less than ten seconds. it's very responsive; an iPhone user has a typing speed of 83 words per minute! And the apps! I haven't purchased a single app yet (I don't use credit cards), and juggle with about three

## Binary Blobs

Binary Blobs are mysterious pieces of code, (possibly closed source), injected into Open Source projects, with no documentation or explanation



Read an interesting article on e-waste at <http://www.thinkdigit.com/d/eslums/>

Feature



Watch your loved ones admiring themselves!

free Brain Age clones whose demo versions are very generous. There's tremendous value to be unlocked from usage, and loyalties are made through products that deliver. My dad still uses an iPod Shuffle that I got for him five years ago. It still works.

If my employers were to give me any notebook of my choosing, I'd go for the highest end Macbook, the best computing experience, but since I finance my own tech, I have an Acer Aspire netbook with a 12-inch screen that I purchased for Rs. 24,000, four months ago. It's now available for Rs. 19,000, and getting more obsolete by the day.

Where am I going with all of this? Well, it's an enquiry into everyone's double standards. As a tech journalist, I've reviewed everything from game controllers to graphic cards, motherboards and processors, laptops and phones and games.

My idea for Switchclick comes with the realisation that when computers get junked, they can be poi-

sonous to the environment. Instead, they can be refurbished, repurposed, and crafted to make value out of scrap.

Harshit Patel, who runs Techshop.in, an e-commerce site that sells computer hardware, and also has an e-cycle program on the web site, agreed to give me a glimpse of the recycling industry in Mumbai, which, according to a 2007 Guardian article, employs around 2,50,000 people.

Dead computers and their galaxy of components have in them a number of rare earths and precious metals (gold, palladium, neodymium, etc.) worth recycling, but also contain a number of toxic substances that can spill into the ecosystem. The laundry list of toxic chemicals include: arsenic, brominated flame retardants (BFRs), mercury, phthalates, and polyvinyl chloride (PVC). These are being eliminated by many manufacturers, and Greenpeace has been keeping tabs on everyone including Apple and Nintendo.

E-waste is a serious problem, a PTI wire story from 2009 reports that



A cool and interesting application for old hard disks

e-waste from discarded computers, TVs and mobile phones will cross 8-lakh tonnes by 2012. According to a greenpeace report, India generated 3.8 lakh tonnes of waste. Only three percent of it is recycled, says Nitin Gupta, CEO of Attero Recycling, one of the few Indian companies that legally processes e-waste.

Attero Recycling has been given permission for import of 8000 metric tonnes of hazardous e-waste from UK and USA, but reiterates on a best practices page that the focus will be on domestic e-waste recycling. They have been organizing collection drives in residential areas and have a direct number that anyone can call to dispose of electronic waste.

But the problem does little to address the informal industry that handles 97% of electronic waste.

## Recyclism and Makers

Cory Doctorow, co-founder of Boing-boing.net, has a has free to download

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## OpenStreetMap

A wiki-like approach to maps, this project is a Open Source approach to mapping the face of the Earth

science fiction novel that tells the story of two inventors who reprogram seashell robots to toast, and Elmo dolls to drive cars. Sound too novel?

There's a hacker artist from Dublin called Benjamin Gualon, who has founded the movement of recyclism, and has been creating unique ways to hack old hardware and extract more functionality out of them.

His most interesting project is The RES: made a totally unique object of beauty and joy – a custom

can be repurposed. An artist from New Zealand has turned circuit boards into lamps.

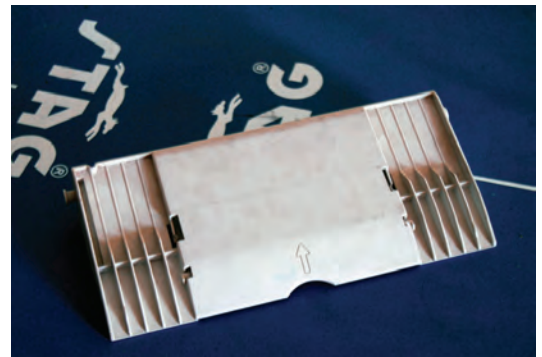
62 ways to use a dead computer, a book by Randy Sarafan, shows ways in which you can reuse and downcycle a computer's components. Notable ones include: A gamer guitar that's amped up using a computer's power supply, a keyboard lamp, earbud speakers, phone safe, gear

## Open Design

Experts are contemplating the introduction of Open Source philosophies to Industrial Design as well, the movement is called Open Design



Garbage for good health?



A stripped down printer serves well as a laptop stand



Add a couple of fans and you have a cooler ready

# I THINK GREEN

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[www.facebook.com/ithinkgreen](http://www.facebook.com/ithinkgreen)

rock band kit out of 8-bit Nintendo consoles and a bunch of gamepads. Each gamepad handles one particular sound: bass, drums, synthesizer, percussions, etc. Surely our country of out-of-work electronics engineers can make things like these for cheap!

Older computers can be refurbished to boot on Linux, or they

clock, PDA doodler, Scanner table, and the Portable Amplifier made out of a desktop PC.

It's a really neat book, and it just scratches the surface! If you want more ideas, there's [www.instructables.com](http://www.instructables.com) as well!

## Open Source Design

Afghanistan is a war-torn country, with no telecom regulatory authority or much of a telecom industry in the first place, it was the perfect testing ground for Volunteers from the MIT Bits and Atoms lab.

They built a wireless network in Jalalabad, Afghanistan out of locally sourced junk – pieces of board, wire, a plastic tub, and oil cans.

This is an open source open design initiative, which means that anyone can copy this design to build their own wireless network. The wiki also provides reflector designs, configuration files and instructions that anyone can use to turn a Linksys wrt54GLs router into a Fab-Fi.

According to the Fab-Fi wiki, the nodes use Linksys WRT54GL wireless routers running OpenWRT 8.09.1 (Kamikaze) firmware. Signboard

and acrylic, chicken wire, stainless woven mesh and window screen have been used as reflective materials.

These ghetto reflectors boost the range of the wireless network to a range of one kilometre. The locals are using the infrastructure for video Skype, and Google searches.

"I believe that distributed ownership without any legal payback obligations may spawn a richer way of looking at work, and of knowledge dissemination," says Poonam Bin Kasturi, founder of DailyDump.org.

The site sells affordable a kitchen waste composters which can convert



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## Open Prosthetics

An ex-marine who served in Iraq started the [openprosthetics.org](http://openprosthetics.org) project, an example of Open Design efforts. The project hopes to make access to advanced prosthetic designs universal

organic waste in about 100 days. For a thousand rupees, you can get Bada Khamba, a kitchen waste composter that can manage waste generated by a family of five. The product write-up claims that it is odour free and doesn't attract pests and flies.

Even better, anyone can hire a local potter, and clone Daily Dump's designs and run your own franchise. There is no royalty structure stopping you from doing so.

Bada Khamba was designed by Poonam Bir Kasturi, a graduate of NID. "Her passion is to demonstrate simple alternative practices in the cycle of production and consumption.", her TED bio reads, and with DailyDump, she wants to make composting a national habit.

"My interest is to try and change behaviour and creating a large centralised business is not the priority. So when you set such a goal, then you view traditional ideas of competition, market share, wealth etc. through new lenses. What do I have to lose? If I fail, they will all say, ha, these non-management types don't know how to read a balance sheet. But if composting becomes a national habit, without one large business house but lots of micro-enterprises, then the purpose of Daily Dump is well served."

Quite a few businesses that use Daily Dump's open source design, ex-Digit Asst. Editor Karan Manral runs Green Essentials, based in Taleigao, Goa which sells composting pots, herbal solutions and indoor plants. It's one of the dozen odd businesses that use Daily Dump's open



Express yourself with your toolbox

source design, which has a wide range of products.

Which brings us to Switchklick.com. It already has a dozen unique ideas that I've created. I have plenty more in my head, but not enough time. I think there is a market for geeky collectibles, CPU and RAM sticks can be fossilised in acrylic or transparent plastic, fashioned into key-chains. In the long run, I would like to come up with a recyclists cookbook, full of original and amazing ideas to make something new and unique and personalised out of junk. Many of these ideas will be simple to implement, while some will be good enough to be saleable.

## Designs from Switchklick

**Lantern:** Made using parts from a desktop hard drive, a keyboard, and a candle light holder. It gives a mild hue when used with a candlelight. Will try to upgrade it to a USB-powered LED light to see if it's better.

**Printer tray:** A discarded printer tray can be use it to rest your laptop or netbook. Not only is it ergonomic, a ten degree angle between the surface of your table and your laptop is more than enough to provide ample ventilation for your CPU fan.

**Bathroom Mirror:** The HDD platter is shiny, and reflective. It can be used like a mirror.

**Cup Holder:** The hard disk block has solid grooves, it can be used as a cup holder. You won't have to worry about spilling your coffee again.

**Accupuncture Keyboard Footrest:** You need two keyboards

## Brewtopia

No, the Beer is NOT free, but ex Red Hat employees let you customize the packaging, and it is a favourite drink at tech company parties



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for your feet. Preferably mechanical keyboards, they make a loud clickety sound and feel really good!

In the meanwhile, the following five documentaries will change the way you consume:

- The Corporation
- Home
- Manufactured Landscapes
- Addicted to Plastic
- The Age of Stupid 

*The author is a technology enthusiast and is actively involved with e-waste and recycling initiatives. He is an avid Digit reader and regularly contributes to our web site and magazine*



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**Inventor of practical LED**

Nick Holonyack Jr. developed the first practical visible-spectrum LED (red) in 1962 when working with GE

**LED used to transfer data**

Fraunhofer Institute for Telecommunications researchers have used commercial LEDs to transmit data wirelessly at 230 Mbps

Nimish Sawant

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**P**ower cuts and water shortages have become grim realities of our lives.

It's a clear case of a skewed demand - supply ratio. Everyone has, at some point or the other, faced power and water shortages. Conventional sources of energy are fast depleting. With a booming population, short supply of resources is inevitable. Thus, the need for investing in alternative sources of energy is paramount.

We come across lots of articles and web sites telling us what steps to take to cut down on your power consumption, how to make your life more green and the likes. We at Digit, believe in doing all those things. So for this issue, we decided to hunt for individuals who have actually gone ahead and done something in this regard.

The people you will read about in the following paragraphs are people like us, who lead normal lives and have normal power consumption needs. But their attitude towards sustainable living is what sets them apart from us. These are people who have taken pro-active rather than

reactive measures to future proof their energy needs.

**Lighting up your house**

Three thousand kilometers of cycling a year is just one of the things that the determined Atul Gopal indulges in. His other pet project is saving energy by switching to alternative means to light up his house. An engineer and MBA by education, Gopal is the founding member of a training institute in Pune which prepares students for management entrance exams. Since the last two years, Gopal has adopted light emitting diodes to light up his drawing room.

So what really prompted him to switch to LED lights inspite of knowing that it was going to be an expensive affair. "In 2008 my friends Pankaj and Rahul, engineers from IIT Bombay, were working on street lighting using LED lamps. I pestered them into doing something for my drawing room," he said. The pestering worked and the three friends got together to light up Gopal's drawing room.

The early days of adoption gave them a taste of failure as well. "In 2008 the LEDs available had a rating of 1 W, with a light



# Greenvest for the future

**Digit profiles citizens who are using alternative sources of energy to cut down on their electricity bills, in the process leading more greener and cleaner lives**

## Wind Power Ranking

India ranks 5th in the world with a total wind power capacity of 10925 MW as of 2009 whereas US is No. 1

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Feature



Atul Gopal (inset) along with a photograph of his drawing room in which he has replaced all the lights with LEDs

generation of about 85 Lumens. We used roughly one for every 10 sq ft. The current lighting is reasonable for most activities, except reading. We deliberately chose a slightly lesser intensity, after spending Rs. 4000 for a new set of LEDs when our electronics to dim the LEDs ended up busting all of them," he says tongue in cheek. The situation has improved now with LED lights coming with 50 per cent more Lumens at a 50 per cent lesser price.

But these failures did not deter Gopal as the savings he encountered with this source of lighting were quite significant. Before LEDs, he used two CFLs that consumed 40 W of power. Using an LED having a power consumption of just 1W, Mr Gopal used 17.5 W in all to light up his 150 sq. ft. drawing room. "I am saving about 22.5 W using LED lights. In terms of rupees, assuming a usage of about 4 hours a day and 300 days a year, the savings are about  $1200 * 22.5 = 27$  kWh. My residential electricity rate in Pune is about Rs. 5 per unit. So I end up saving about Rs. 135-150 per year. In percentage terms this is 2 - 3 per cent of my bill, with just one room converted. Also note that I was already using CFLs before this," he said. According to Gopal, the LED lights he has invested in will last him for a good 25-30 years.

## Harnessing solar energy

Sealine Society in Bandra (W), Mumbai seems like any other housing society in the neighbourhood, but signboards like 'Water is precious' and 'Conserve Energy'

are out of the ordinary. Only when you walk around the society and have a tour of its terrace, does the gravity of those signboards sink in. Thanks to octogenarian Navin Chandra, Sealine Society has no worries as far as electricity and water shortages are concerned.

A chemical engineer by education, Chandra has worked in the capacity of a CEO of a multinational company

in the past. At an age when most of his peers would rather rest at home, Chandra has taken initiatives that have resulted in his society saving on their monthly electricity bills. One such initiative was to convince his society members to invest in solar panels in 2006.

While taking us to the terrace, Chandra stressed on the importance of such initiatives. "Some years back the cost of solar panels was quite high, but now that price is reducing. Conventional electricity, on the other hand, is rising," he said.

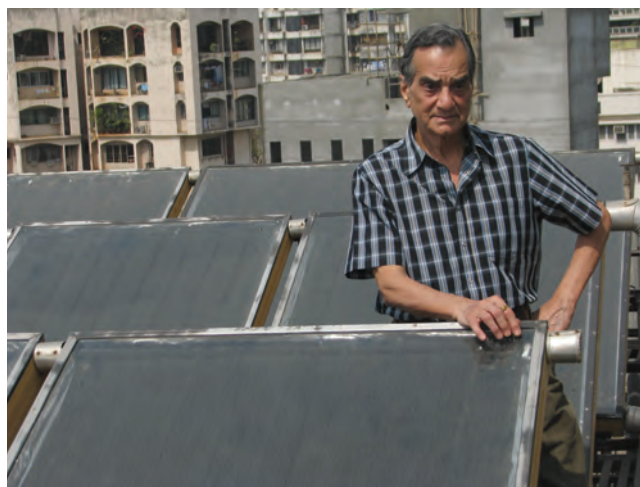
The terrace of the building has a small garden and is surrounded by solar panels, and a solar water heater facility. "We have a total of 24 solar panels. Eight of them are rotary, which means they can move along with the sun such that efficiency is maximized by facing the sun. The energy from these panels is stored in the batteries that are placed in our terrace store room. The DC current is converted to AC by an inverter before this energy is used for lighting up common passageways," he told us. One cannot help noticing the enthusiasm with which Chandra explains the whole setup and answers all queries with a smile.

## JNNS MISSION

Jawaharlal Nehru National Solar Mission (JNNSM) is a part of the National Action Plan on Climate Change (NAPCC) which has set a target of achieving 20,000 MW solar power installation by the year 2022. The main idea behind this mission is to bring the price of solar power and grid power on par. The idea of the mission is to build on this and also focus on Research and Development and HRD to develop and strengthen Indian skills thereby enhancing indigenous content to make the mission more sustainable.

The electricity generated by the solar panels which is about 2kW, is enough to light up about 50 lights in the common passageway. According to Chandra, since the common areas are only used during certain part of the day, the use of electricity is spread across the day. This little measure has ensured that the society saves a decent amount of money on its electricity bill.

One question that arised in our minds was, if the solar energy is used for lighting common passageways, then what was stopping members from using it for secondary lighting in their houses. Chandra stated that most of the houses in the society had concealed wiring, and to rewire the house for secondary lighting did not make sense. "Moreover right now we only generate enough solar energy for lighting common passageways. For generating additional energy we will need more solar panels and lack of space on our terrace prevents that," he said.



Navin Chandra standing alongside the solar water heating panels



## Grey Water

Grey water is the waster water generated from laundry, bathing, dish washing comprises 50-80 percent of all household waste water

Another interesting aspect about the society is that none of the houses have a geyser to heat water. Thanks again to Chandra who set up a solar water heater on the terrace. "Geysers consume a lot of power, so we thought of installing a solar water heater on our terrace, which will provide hot water to the residents," he said.

Chandra showed us the solar water heating panels which were placed one level above the terrace. Placed in a 4 by 4 grid like arrangement called batch heaters, the water to the panels is provided by a pipe that runs across all the panels. It's technically called an Integrated Collector Storage tank. Each heater has a glass covering and is placed at an angle from the ground. It's fed water from one end. The water trickles down through the miniature capillaries such that by the time it gets out of one batch of four heaters, it is comparatively warm. The process is repeated for three more such batches.

"Sometimes during the summers, with soaring temperatures to prevent overheating, I have to let out some steam from these steam relievers," demonstrated Chandra. After the water has passed through all the panels, it is considerably hot and is collected in a 2000-litre tank which regulates the temperature. When we were checking it out, the temperature of the water was 60 degrees Celcius. "This heater is connected to the all the 25 bathrooms in the building, thus bypassing the need for a geyser," said Chandra. Just doing away with geysers cuts down on 30 units of power per month which equates to Rs. 150 (at a rate of Rs.5/unit) savings.

## Hybrid Energy: Solar + Wind

The next logical question on our mind was harnessing Wind energy. But after talking to an energy technology specialist, we learned that using just windmills to generate

energy from wind is just not a viable option.

Sunil Tongay, an electronics graduate from Mumbai University had always been interested in electronics and indulged in a lot of hobby electronics in his school days. After working for around 15 years in the IT industry, Tongay decided to move into the Energy Technology sector back in 2005. He felt that the future lay in Energy as IT was reaching a saturation point.

"I am deeply interested in electronics. I decided to take a break from IT because I thought that my base in electronics will help me a lot in the energy technology segment," he told us recalling his decision. Five years into the field Tongay has spearheaded around 100 projects which involved using alternate sources of energy like wind and solar energy in daily life. He specialises in hybrid energy generation.

"The minimum wind speed required to generate electricity is 5m/sec. Now in a city like Mumbai where most of the housing societies are not planned correctly (ie houses facing the south) one cannot efficiently harness the wind energy. Housing societies in Worli

have an edge over other places in Mumbai as the wind speed there is quite high. And apart from the monsoon seasons, there isn't much wind blowing anyway," said Tongay justifying his stand as to why only using a windmill in societies was not a viable option.

However if windmills are teamed up with solar panels, the combination can work wonders. During the monsoon months, the wind mills can contribute more and during summers the

## First Windmill

Charles F. Brush made the first use of a large windmill to generate electricity, in 1888 in Cleveland, Ohio

solar panels can take over. During other months, it will always work in a combined form thus harness the best of both natural sources.

Tongay has installed a hybrid system for his office premises. He took us to his terrace where he showed us an interesting aspect which involved using alternative sources as well as energy from the grid to reduce load on the grid.

"We have teamed the hybrid solar and wind system to a Grid Tied Inverter (GTI). The GTI allows us to combine the electricity generated from the hybrid solar

– wind system along with the grid to power a load irrespective of its energy consumption. We have our server room in the basement, which needs 24/7 air conditioning. Thanks to the GTI we can use the grid power along with the power from hybrid system to power those ACs. Due to this we save a lot of power which we could have otherwise used from the grid," explained Tongay. He also drew up a circuit diagram



Energy consultant Sunil Tongay

which simplified the understanding of the concept. However, this is effective only in places which have a constant power supply from the grid.

Suresh Patkar, a Navi Mumbai resident also installed a hybrid solar-wind energy system at his residence as his family's consumption was quite high for a three member family. "I was planning

## GRID TIE INVERTER

A grid tie inverter acts as a mediator between your DC solar array and your home's AC power grid. The DC power generated by the solar panels or hybrid solar-wind system is inverted to a higher AC voltage so that home appliances can be used. When not in use, the power generated from the alternate sources can be fed back to the grid. Using a GTI bypasses the need to use battery power bank to store energy. But for the grid tie inverters must be in phase with the power grid for you to send back power to the grid.

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## Electricity from Photosynthesis

Researchers at the Centre de Recherche Paul Pascal (CNRS), France have transformed chemical energy generated by photosynthesis into electrical energy by developing a novel biofuel cell

Feature

to install it for the last 2 years. I stay at Vashi and my bungalow is facing the creek where wind pressure is good," he said. This system has helped him reduce his conventional grid consumption by around 25% and he uses the system for around four hours daily.

According to Tongay, as most of the office building in most of the cities are working in the day time, they can easily install a couple of panels on their office premises to take care of their secondary lighting needs. "It will all ultimately add up and will make us more sustainable," says Tongay.

### Rain water harvesting

July 26th, 2005 is a date that is etched in the memory of many Mumbaikars. The western suburbs in Mumbai were flooded for days with electricity cut off and many parts of the city not getting drinking water. Sealine society was one rare exception which had no problems of water shortage.

When Chandra moved into the housing society in 2001, Sealine society was facing heavy water shortages. Due to the residence of a minister in the society, there were a large number of security personnel who also used the society's resources, thus putting a strain on it. Around two water tankers supplied water to the society every week. "Not only did this

push our society's water bills through the roof, but we found that the water provided by the tankers needed to be filtered to be consumed," reminisced Chandra.

In 2004, Chandra proposed the rain water harvesting plan to society members. The rain water from the terrace and compound is collected in a 10,000 litre tank that is under the ground. A 70 feet channel with bare bottom (i.e. a channel having a base of mud, sand and pebbles) guides the water to the ground. This rain water seeps through the ground and charges

the ground water table. "The speed of charging is low as compared to collection of water when it rains heavily. If it's not charged at that rate then it will flow into the drains. So we have three 6-inch wide, 100 feet deep bore wells to increase the rate of charging the ground water table," explained Chandra. This harvested water can be pumped out at the rate of 6000 litres / hour to all the homes with the help of a submersible pump. As water for non drinking purposes is supplied thanks to rain water harvesting, the society only needs drinking water from the municipality, cutting consumption by around 50 per cent.

This initiative provides the society with enough water for all the non drinking purposes. But being the innovative person that he is, Chandra took rain water harvesting one step further by installing a water treatment and filtering plant. "We have no shortage of drinking water. Our society has sufficient water for the next 10 years," he claims.


### Other Initiatives

The individuals we spoke to believe in spreading their knowledge. They are optimists and believe that time is not far when switching to alternative sources of energy is going to be inevitable.

Chandra is consulted by at least 2-3

societies every two weeks regarding adoption of solar energy in their premises. Apart from this consulting, Chandra is the Chairman of an organisation called Jaago Mumbai.

In this report we have covered a limited number of people due to space constraints. But there are countless others out there who are doing their bit. With time we are sure, things will improve on the alternative sources of energy front. They have

to. We are left with no other choice but to adopt green measures. 

### JAAGO MUMBAI

Jaago Mumbai is an organisation formed by the citizens of Mumbai with an objective to empower the community with the knowledge and awareness of making their surroundings more environment friendly. It plans to make a municipality garden into an eco-friendly one, which will act as a working model for rain water harvesting, using solar energy for lighting and vermi composting. It plans to come out with a community radio station which will have programs which will educate the community about energy conservation, disaster management among other things.

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**Hot water**

By reducing the temperature setting of your water heater from 60 to 50 degrees Celsius, you could save over 18 per cent of the energy used at the higher setting

# Go green = Save money

Siddharth Parwatay

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Usually when we think of 'going green', we assume it's for people with deep pockets – that it will involve making monetary sacrifices and taking a lot of trouble, going out of the way in terms of both effort and money. This is just a widespread misconception, because on the contrary, cutting corners by taking green measures will save you a lot of money. Here, we tell you eight simple steps you can take that will help you save money and even save the planet.

## 1 Switch to CFLs or LEDs

Environmentalists have been exhorting this paradigm shift for quite some time now. If you still have incandescent bulbs then you seriously need to throw them out. Consider this: by some estimates, the life span of LED bulbs is around 45,000 to 60,000 hours. On the other hand, incandescent bulbs and CFLs operate for 1,500 and 10,000 hours, respectively. In terms of luminescence or the amount of light each of these produce, to get the equivalent of 60 W of light from an incandescent bulb, you only have to consume around 14 W for a CFL and 6 W for an LED. You might then say that the initial investment of the environmentally friendly options would be high. Yes, but considering the life spans and the low power consumption of both CFL and LED, you'd recover the cost in no time. In fact, imagine the money saved over the entire life span of an LED bulb – 60,000 hours. By some estimates, over its life span, it'll save you close to Rs. 16,000 in cost of bulbs (40 incandescents)

as well as electricity cost. But a figure you can relate to more is how much the switch from incandescent bulbs will save you in simple energy costs for a year - Rs. 788 for two bulbs.

## 2 Driving tips

It's a commonly accepted fact that driving between 45 to 55 kmph increases fuel efficiency. At this optimal speed bracket, you're expected to drive steadily without jerky acceleration and rapid braking. Basically, don't be an aggressive driver and it'll save you 15 per cent of your fuel cost; that's the thumb rule. Idling the car for a long time obviously makes no sense. You're wasting fuel and burning money, adding to the pollution, and not going anywhere. The rule here is that if you're going to stop for more than 30 seconds, you should switch off the engine. The initial surge of fuel burn at ignition gets countered if the wait time is above 30 seconds. A Japanese study showed that for a distance of 3,700 kms, when idling norms are strictly followed it saves 6 per cent. For an average Indian car with a mileage of 15 kmpl this distance would cost around Rs. 12,000 of fuel. So you could potentially save Rs. 740, every 3,700 kilometres. Consider this: if you travel 30 km a day, just preventing your car from idling can save you 6 per cent of  $30 \times 365 \times 50 / 15 = \text{Rs. } 2,190$  a year!

Also remember to use properly inflated tyres, avoid unnecessary dependence on air conditioning, and whenever possible, carpool.

## Eight simple steps that can help you save enough to subscribe to Digit for 9 years!

### 3 Switch to solar heating

One of the biggest guzzlers of electricity in any household is the big old water heater. In some parts of the country water is heated for nearly half of the year. This water is not used just for bathing, but also for other applications – washing hands, cooking, etc. A typical storage water heater that can raise the temperature of 25 litres by 35 degrees Celsius has a rating of 2000 W and takes about 33 minutes to do it. So a reasonable estimate would be that you'd need an average of 2 cycles to heat about 100 litres of water, ie one hour of usage a day (considering some water will not have to be raised all the 35 degrees from room temperature). This means 2000 watts a day  $\times 30 = 60$  kwh. Comes out to Rs. 240 per month just on heating water. By way of instant heaters the amount is almost the same. At a flow of 3 litres per minutes most instant heaters raise the temperature by 21 degrees. So heating around 100 litres of water takes about half an hour of runtime. However instant heaters have a higher rating than storage water heaters – 4500 W. That means 15 hours a month  $\times 4500$  W = 67.5 kWh. At a cost of Rs. 4 per unit that comes out to Rs. 270.

By either of these methods you end up spending over Rs. 1,500 a year on heating water if you only consume hot water for half the year. Switching to solar is a viable cost effective alternative. They work in any climate and the only fuel they need is sunlight – which is free. There is of course an investment which you can quite easily

### Yearly household energy savings

	Incandescent Light Bulbs	CFL	LED
Consumption in Watts	60	14	6
KWh used per year @ 5 hrs/day (2 bulbs)	219	51.1	21.9
Electricity Cost (@ Rs 4.00)	Rs. 876	Rs. 204	Rs. 87
Savings by switching from Incandescent	0	Rs. 671	Rs. 788

### HOW TO CALCULATE ELECTRICITY CONSUMPTION

Every appliance has a power rating in Watts. This is known as wattage. Multiply this figure with the number of hours you are expected to use that appliance. Divide this to get the Kilo-watt per hour consumption. You can use this formula:

Wattage  $\times$  Hours Used Per Day  $\div 1000 =$  Daily Kilowatt-hour (kWh) consumption

A Kilowatt-hour is also called a unit. So if an appliance consumes 3kWh it uses 3 units. Multiply this by the prevalent rate per unit and you get the energy consumption in Rupees.

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recover in the life span of the equipment. The real cost benefits of this system show up when you opt for a solar water heater for your society or building. Much greater economies of scale apply then. For an individual household the set up costs are around Rs. 130 per litre so a 100 litre setup would cost around Rs. 13,000 with an additional cost for installation. Here we're talking about evacuated tube solar collectors. Some of the things to look out for are insulating material quality and the reflective sheet underneath the tubes.

## 4 Buy star rated products

Energy Star Rating was first introduced by the US Department of Energy in 1992. The program ensures strict testing procedures in order to identify and promote energy efficient products. This reduces green house gases as well as saves money for the end users.

Specific to India, B.E.E (Bureau of Energy Efficiency, Govt. of India) has come out with a standard. Originally designed for Air Conditioning equipment, the objective of this labelling system is efficient use of energy and its conservation. BEE Star Label is now Mandatory – for Frost Free Refrigerators, Room ACs, Tubular Fluorescent Lamps and Distribution Transformers. We saw the BEE Star label on a couple of heaters too. The rating system is quite consumer friendly. The number of stars can vary from 1 to 5. Higher stars indicate higher energy efficiency and more energy bill savings for the customers. On a demo chart for refrigerators we noticed that a five star rated product consumed about half the electricity as non-rated refrigerator, which translated into a saving of Rs. 1750 per year.

## 5 Use natural resources

Many homes as well as offices are increasingly being designed to be naturally lit, cooled and heated. You too can structure your activities in such a way that use natural light more often. For instance if you want to read a book, there's no other source of light better than diffused sunlight. On the ventilation front, cross ventilation along with ceiling fans can do wonders. They're cheap too, costing less than 30 paise to run. Put up light reflecting films on windows to keep indoors cooler.

Clean air filters in ACs, this improves ventilation and air flow too. These methods should allow you to keep your cooling costs down by at least 10 per cent, which would be typically about Rs. 400 a year if your AC bill is Rs. 4000 a year.

## 6 Banish the vampires

Any electronic appliance when its on standby or even switched off draws some amount of power as long as it's plugged into a socket. This is known vampire power. While many of us know that such a thing occurs, we often underestimate the magnitude of how much this drain could be. Some estimates suggest that up to 22 % of all appliance consumption occurs from standby power drain. Adapters that usually don't come with a power button are the most hefty vampires. To avoid this it is recommended that you get power strips and flip just one switch for a set of connected appliances to turn them off. Or better yet, pull out the plug. The minimum reduction in bills is estimated to be around 10 per cent. So if you spend about Rs. 1000 on your electricity bill per month you should save Rs. 100.

## 7 Adjust the settings

- Turn your water heater thermostat down 2 degrees in winter and up several degrees in the summer.
- Set your A/C thermostat to 23°C – 25°C. It provides enough comfort and the AC operates for lesser time.
- Check if your refrigerator is unnecessarily cooling more than you need.
- Use appropriate load settings for your washing machine

## 8 Go LCD!

Some people believe that the lower power consumption of an LCD is overrated and that continuing with a CRT is the way to go. This is absolutely false. Let's just compare the power consumptions. A

## Clean light

Dirty tube lights and bulbs reflect less light and can absorb 50 percent of the light; dust your tube lights and lamps regularly

### How much can you save?

2 incandescents to LEDs	788
CRT to LCD	700
Solar water heating	1,500
Driving responsibly (30 km a day)	2,190
Pulling the plug	100
5 star energy refrigerator	1,750
Light and ventilation	400
<b>Total</b>	<b>Rs 7,428</b>

typical 19-inch CRT's power rating is set at around 100 W, and a similar-sized LCD, around 30 W. So what type of savings are we talking of here? Say you run a monitor for seven hours a day for a year. A CRT will then consume around 255 kilowatt-hours of power, and the LCD will pull around 76. Assuming that 1 unit (1 kilowatt-hour) of power is priced at around Rs 4, the difference in bills between the CRT and LCD over a year is around Rs 700. Multiply that by three years (the common warranty with most monitors), that's over Rs 2,100 saved. If you use your screen for more than seven hours, that would mean an even bigger saving. Now the cost to replace a CRT is also very affordable, since at the lower screen sizes LCDs are dirt cheap. Also remember, LCDs run at much lower temperatures. If you use an air conditioner in your computer room, the benefits of using an LCD might show up from further savings in this region as well. And of course let's not forget the glare reduction.

By now you would've realised that your little piggy bank of savings has become quite substantial. Although some of these calculations and assumptions are not exact, and others savings cannot be accurately measured, ball park figures suggest that you have enough savings to recover your annual Digit subscription. In fact there may possibly be enough savings to gift yourself another subscription! So go ahead go green – save the planet and save your money. **d**

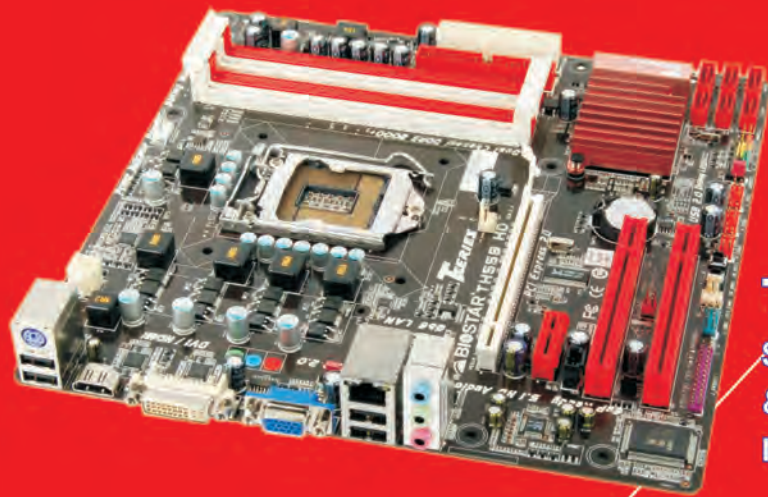


Use this online energy calculator to figure out how much money it'll cost you to air condition your house and how much money you can save by opting for various star ratings. Head over to [www.saveenergy.co.in](http://www.saveenergy.co.in). Use the simple and user friendly Energy Calculator that allows you to



choose different capacity of AC, quantity, efficiency level and operating time. The interface is drag and drop. The tool even shows a dummy layout of your house. Once you enter the relevant details, hit calculate. It will then tell you exactly how much your electricity cost will be for the year. Additionally it will inform you of any savings that can be availed by opting for higher star rating and how much.

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With frequent power cuts and rising power tariffs, alternative energy sources help you stay connected. We show you how you could *make hay while the sun shines!*

# Hooked on to the Sun

Nash David  
nash.david@thinkdigit.com

## What you'll need

Solar panel 3Wp  
Battery 6V/4.5Ah  
ON/OFF switch (2 nos.)  
1N4007 diode  
White LEDs  
General purpose PCB  
Soldering iron  
Soldering alloy  
Connecting wire

**Total approximate  
cost of components:  
Rs. 900**

Assembling your own solar-powered study lamp is easy. In fact, Ankit, a Class 8 student assembled one at our office! We provided him with the required components and gave him the wiring diagram. We told him all the information provided here, and left him on his own while our photographer captured each step as it progressed.

## Step 1

Gathering all your components is essentially the first step. Once

you're ready to assemble your study light, gather all your components on a clean table without any clutter. Plug in the soldering iron till it heats up. If heating is slow, switch off any cooler or fan in use.

## Step 2

The first step is to arrange the white LEDs in series. As you can see, the anode and cathode leads appear sequentially.

## Step 3

Once you've connected two LEDs in series, repeat the stages to have a minimum of 10 LEDs. You can increase the

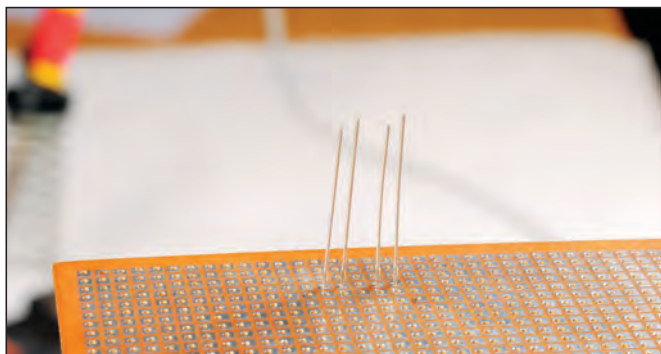
number of LEDs depending on the intensity you need. So products in the market have nearly 150 LEDs. However, this will increase the overall cost of your study lamp.

## Step 4

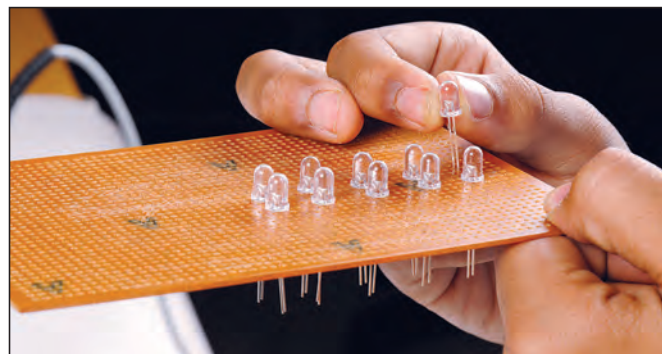
Once you have inserted the LEDs into the board, solder them. Being connected in parallel, the outer leads of the LEDs should be connected together.

## Step 5

Cut the extra leads of the LEDs and connect the battery terminals to the LEDs using connecting wire.



Step 1: Start by arranging the LEDs in series



Step 2: Then you form a train of LEDs

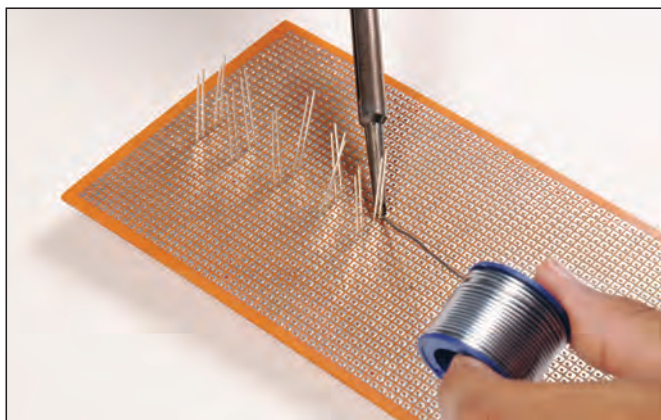


**1,60,000**

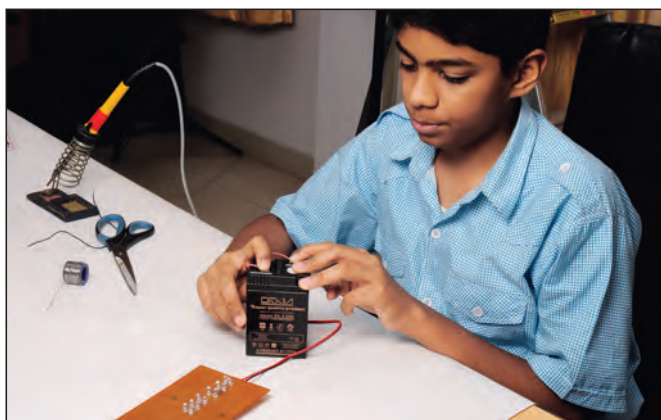
The number of solar photovoltaic panels used in the largest PV plant – the Olmedilla photovoltaic park in Spain

**8896 MW**

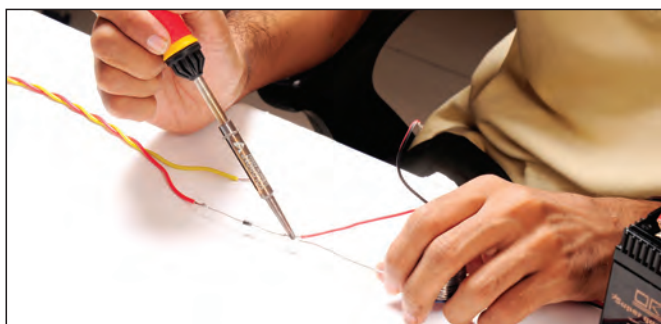
India has the world's fifth largest wind power industry, generating 8896 MW from wind



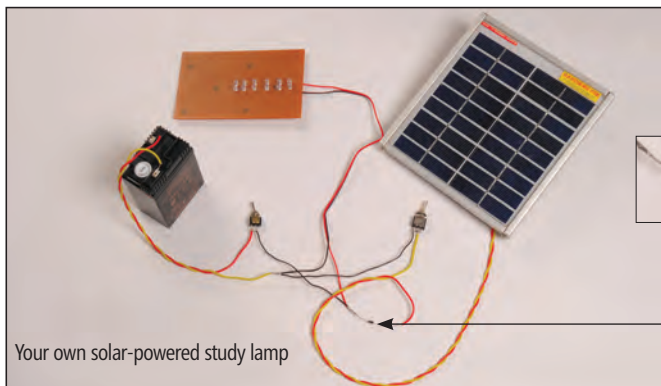
Step 3: Solder the outer leads of the LEDs to ensure they are firmly held to the board



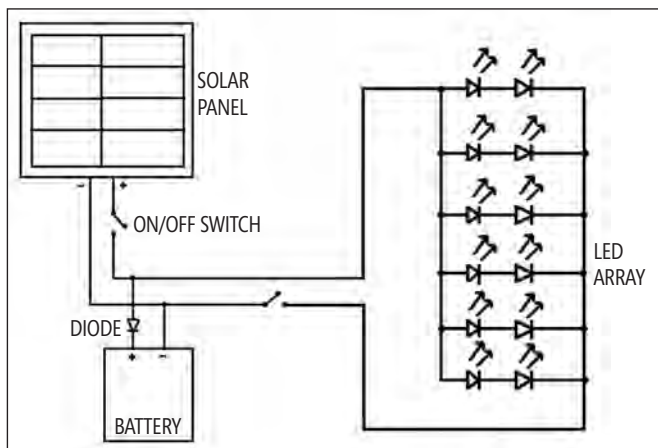
Step 4: Ankit arranged the LEDs with the correct polarity. Here, he's done with the first part of the lamp – the LED array



Step 5: The diode prevents reverse current from flowing towards the solar panel



Your own solar-powered study lamp



The wiring diagram for the solar-powered study lamp

### Step 6

Once your LED array is up and running, what you need to do is connect the solar panel, protective diode, and switch.

### Step 7

After connecting all the components together, verify the connections with the wiring diagram above.

### Step 8

After you have assembled the lamp, you need to put it in an enclosure. You can use a shoebox to house the LED array. The battery can be placed in a plastic jar, with the weight of the battery aiding mechanical stability.

### Basic solar-powered system

The basic components required to produce electricity from the sun are solar panels, charge controller, power inverter, and of course, batteries. The number of solar panels you need depends on your power requirement. The charge generated by the solar panels is used to supply the necessary electricity and charge the battery bank. Charge controllers are used to prevent battery overcharging. This prevents battery damage



Don't let your studies be hampered due to lack of a table lamp

and also ensures longer lifespan of the battery. Power inverters form the basis of the solar power system. The basic function of the solar inverter is to convert 12 volts generated from the solar panel to 220 V AC that can be used to drive household appliances.

Considering the fact that sunshine is available for just 8-12 hours a day, it is necessary to be able to store the charge generated by the solar panels. For this, battery banks are used.

We met Sanjay Gupta, proprietor of Solar Spectrum Energy Systems who shared insights into some products marketed by his company. Gupta has agreed to offer these products at some exciting prices specially for Digit readers.

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You can purchase innovative solar-powered products from Solar Spectrum Energy Systems. For more details, email mahaurja@gmail.com. Avail your special discount by mentioning this Digit article

## Make a difference

Think green. Find out how in the community section of this issue

DIY



Mirolta ultra-bright LED tubelight with 144 Japanese LEDs

### Solar Lantern

Model: CFL lantern

MRP: Rs. 2,500

**Digit special price:** Rs. 1,975

You can depend on solar powered lights when you don't have electric supply. This is a portable, lightweight, all-weather durable and easy to use lamp. This has premium quality 3Wp mono/multicrystalline silicon solar panel with high capacity 6V/4 Ah Lead Acid battery. You have the option to charge the battery either by solar panel or AC mains.

Model: LED filament

MRP: Rs. 3,500

**Digit special price:** Rs. 2,600

This is similar to the CFL Lantern. However, you can adjust the brightness of the lantern



LED filament lantern (Patent pending)

between three levels – Bright: 6 hrs, Medium: 8 hrs and Candle light mode: 12 hrs. The product was designed and developed by Gupta's associates.

LED lamps carry a warranty of 5 years, while the solar panel carry a warranty of 10 years.

Solar Home Light Systems (SMPS Bases)

Model: Mirolta

MRP: Rs.5,500

**Digit special price:** Rs. 3,000.

6V / 4.5 Ah, sealed maintenance free battery

Dual-charging options (solar and mains)

Dual mode operation (High mode: 5 hrs; Normal mode: 8 hrs)

SMPS-based battery charging Operation between 50 V to 300 V AC

144 ultra-bright Japanese LEDs

Easy To Install

No Maintenance required

50,000 hrs

Warranty: LED lamp: 5 yrs, solar module: 10 yrs

Do write in and let us know if you would be interested in optimising your solar-powered device using a charge controller. **d**


## SPECIAL INSTRUCTIONS

Going by the red is positive and black is negative thumb rule will save you a lot of rework. Using a single colour wire results in a lot of confusion over connectivity, and going by past experience, seeing a component blow up is not a pleasant sight. It's not wise playing with a battery. Keep it away from inflammable substances. 6V batteries are capable of generating sufficient sparks to trigger a fire. Do not short the terminals of the battery. Similarly, the solar panel generates a DC voltage that should not be reversed. Connect the red wire to the positive of the battery and the black to the negative of the battery.

Diodes and LEDs (which are also

diodes – light emitting diodes) conduct electricity in a single direction only. They prevent reverse flow of current. For a diode or LED to conduct, its anode should be connected to a positive potential and cathode should be connected to negative. Do not connect the LEDs directly to the battery. Although it appears attractive, white LEDs are not able to withstand a potential of 6V across them. This is precisely why we connect 2 LEDs in series (to offset the potential difference of 6V evenly across LEDs and ensure safe operating point) and then connect similar LED groups in parallel (to increase brightness of our lamp). The longer terminal is anode, and the shorter terminal is cathode.


There are two types of solar panels: Amorphous and polycrystalline type. Polycrystalline panels are better and longer lasting than the amorphous type. Place the panel in an area with sufficient sunlight throughout the day. Ensure, the area won't be covered with the shadow of a neighbouring building in a couple of hours. You can try placing them on the highest available point. If you are a minor, we recommend taking the help of an adult for this. Do not attempt mounting the panel in risky positions of your building/house. Consider taking professional help in case you are not able to install it. Either way, window sunshine should be sufficient to charge your battery.



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# 5 INVENTIONS THAT WILL SAVE THE EARTH



From harnessing the power that fuels the sun, to little black boxes of wonder; we look at 5 inventions from the cutting edge of green technology that could one day save our planet

Siddharth Parwatay  
siddharth.parwatay@thinkdigit.com

Going by some of their responses, the lovelies at beauty pageants seem to be bang on target about crucial issues facing the planet. Most flutter their eyebrows prettily about world peace (if that won't stop militancy, nothing will); protecting the environment (will give up furs and ammonia-based hair colour); and definitely doing something about global warming. Now this last one is where the leggy ladies from exotic lands have caught our attention. In reality, besides not participating in the swimsuit rounds – a major contributor to global warming – there's little that these lovelies can do. But let us take the beauties seriously for once, and find out from the geeks if their wishes can really come true.

Mankind's unquenchable thirst for energy is one of the biggest contributors to our planet's demise. We need energy to drive our cars, to power our computers, to light our streets and ultimately, power our lives. Therefore finding a super-efficient, non-polluting, sustainable method of producing this elixir is the answer. When it

comes to saving the earth, other than birth control, ironically it will be technology that will be the saviour. Could mankind's seemingly endless search for the perfect energy source be just around the corner? Maybe a clean, green and environmentally friendly technology that might even reverse the effects of pollution on our planet. Or a new source of water – despite being in abundance on the planet, water that's consumable is still scarce inland. Let's don our Nostradamus hats, peer into the future and find five inventions that could one day save our planet.

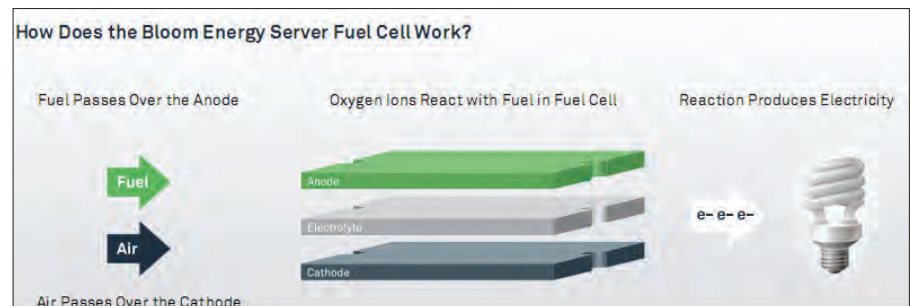
## Bloombox

After almost a decade in complete secrecy, on a sunny day in silicon valley

recently, a nondescript scientist of Indian origin had the world's spotlight turned on him. In an almost unbelievable interview for prime time television show *60 Minutes*, Dr. K R Sridhar held up two little boxes about the size of large Rubik's cubes and claimed they could power an American home 24 hours a day. (He even joked that the same would power six homes back in India). This set into motion one of the most trending topics on the internet all of February and early March. From environmentalists, skeptics, to technologists; everyone was debating whether to believe Dr. K R Sridhar – the man whose invention promises to reinvent the energy business. Sridhar who worked for NASA prior to setting up Bloom Energy, has come up with a new innovation based on fuel cells. For those who are completely unaware of fuel cell technology, let's look at how they work. Unlike energy produced by combustion, fuel cells produce energy by a chemical reaction. A fuel (usually hydrogen) and an oxidant is pumped into a fuel cell which contains an electrolyte. A chemical reaction occurs that results in the creation of electricity, water and some amount of carbon dioxide as byproducts. Fuel cells are of different types and depending on the type of cell a significant amount of heat is also generated. This heat can also be utilised to increase the efficiency of energy production.

In common parlance Fuel Cells are most often associated with green cars. But their application in the mobile arena faced many challenges including carrying enough hydrogen for long journeys. The technology was dismissed by many as technically challenged, but Bloom has once again brought into the forefront.

The BloomBox is a fixed (stationary)



How the bloombox works



## Green bricks

As strong as concrete, a soil composite-based building block by Integrity takes 40 per cent less energy to make and contains 50 per cent pre-recycled materials



## Solar balloons

Imagine shiny balloons that go up into the sky and generate gigawatts of power. Find out more at [www.solar-balloons.com](http://www.solar-balloons.com)

Tomorrow's tech

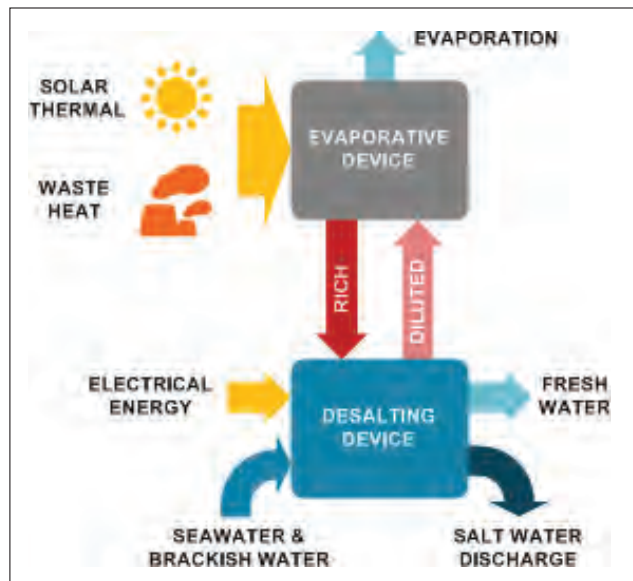
fuel cell that utilises a stack of ceramic plates, each coated with two different proprietary chemical mixes which Sridhar calls 'inks' as the electrolyte. Unlike other fuel cells that need to be fed pure hydrogen, the BloomBox uses natural gas. It can even use green fuels like bio gas and landfill gas. It is more efficient at converting the fuel into energy – using only half the amount of gas as traditional power plants would use to produce the same amount of electricity and uses low cost materials even for the catalyst, which in most cases is platinum.

These BloomBoxes can be linked together to combine their energy output. His bigger boxes or Energy Servers, which are about the size of a parking space have been secretly powering some of the most well known companies in Silicon Valley for quite some time. eBay is reportedly using the 100 Kilowatt boxes for powering 15 per cent of its headquarters.

Currently, even with the subsidies and taxbreaks, the costs are still not favourable for large scale implementation. They have a significant investment and the ceramic plates need replacing every five years. Still the company believes the technology will be brought down to within the reach of an average home owner over time. Sridhar's powerplant in a box could one day take you off the electricity grid entirely, since his dream is to install one in every backyard. "Don't start signing up for orders yet, this is a product of the future", he said at the unveiling.

## Solar-powered water de-salination

According to Karan, head-business development at Shashwat Green Fuels & Technologies "Our biggest challenge is Water and not Energy. People can live without lights or air conditioners or an iPod, but they cannot survive without water." Although most of Mankind is located near water, not much of it is usable for drinking. 97 per cent of all water on earth is sea water and half of what is available is frozen at the poles. By some estimates nearly 20 per cent



The desalination process explained

of humanity does not have access to clean drinking water. The quest for desalinating or removing salt from sea water to make it drinkable has been on for quite some time. Some of the well-known methods of desalinating water are distillation or reverse osmosis however, as you can imagine they are very energy intensive and hence expensive. So what about the majority of the world's population that cannot afford this luxury?

A company called "Saltworks Technologies" from Vancouver, Canada, may have the solution. The company is on the verge of commercialising a breakthrough desalination technology during a time of increasing freshwater scarcity, rising energy prices, and mounting concerns over carbon impacts. The company has come up with Thermo-ionic technology that can make cheap drinking water from the sea using evaporation and ionic conduction, powered mainly by sunlight. Saltwater is evaporated to produce a concentrated solution.

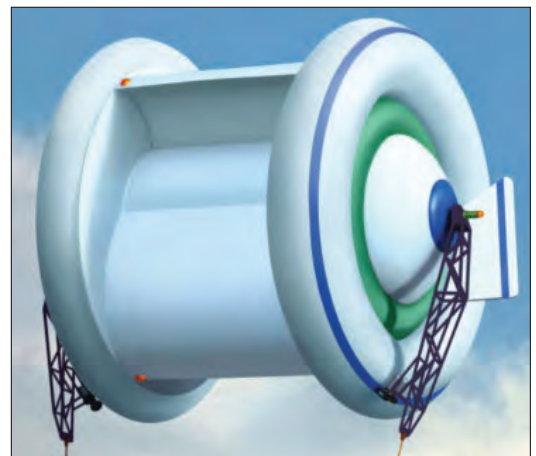
This solution, which has concentration gradient energy, is fed into Saltworks' proprietary desalting device to desalinate either seawater or brackish water. Some electrical energy is used to circulate fluids at a low pressure, yet the bulk of the energy input is obtained through the evaporation itself. The

amazing features of this kind of an approach are that it uses up to 80 per cent less electrical/mechanical energy that is required by plants based on reverse-osmosis and other processes. Theoretically, the technology is scaleable enough to supply anything from cities to small villages.

## High altitude wind power generation

Wind, along with the sun, have always been looked at as the prime sources of renewable energy. There has been a lot of work in the solar sector in both photovoltaics (PV) and concentrating solar power (CSP). A company called

Nanosolar has even come up with technology to make super thin photovoltaic films. Still, one of the most promising sources and relatively untapped is Wind. Magenn Power is making strides in this sphere. "There is enough energy in high altitude winds to power civilisation 100 times over; and sooner or later, we're going to learn to tap into the power of winds and use it to run civilization." says Ken Caldeira, Professor of Global Ecology at the Carnegie Institution for Science on Magenn Power's web site. Magenn Power has developed a high altitude wind turbine system called MARS - short for Magenn Air Rotor System. It's essentially a flying turbine in the form of a large balloon which spins at high altitudes generating power. "MARS is a lighter-than-air tethered wind turbine that rotates about



The Magenn high altitude turbine prototype



## Water for sure

Segway inventor Dean Kamen has invented a filterless water purifier that makes drinking water from sewage, ocean water and urine, but it's reportedly very expensive



## Patented bacteria

Coskata produces ethanol from landfill waste by processing waste gas in a bacteria-based bioreactor. The bacteria makes the method incredibly energy-efficient and cuts CO2 emissions by 84 per cent!

a horizontal axis in response to wind, generating electrical energy," says the official description. This electrical energy is transferred down the 1000-foot tether for immediate use, or to a set of batteries for later use, or to the power grid. Helium sustains MARS and allows it to ascend to a higher altitude than traditional wind turbines. MARS captures the energy available in the 600 to 1000-foot low level and nocturnal jet streams that exist almost everywhere.

## Laser fusion possibilities

Harnessing the energy of the sun and stars to meet the Earth's energy needs has long been the holy grail of scientific and engineering endeavour. At the heart of this branch of alternative energy are ultra powerful lasers, since the kind of heat and pressure required to drive a fusion reaction can only be created by such lasers. A fusion power plant will generate energy by fusing atoms of deuterium and tritium – two isotopes of hydrogen, the


greenhouse gas emissions, can operate continuously to meet demand, and would produce shorter-lived and easier-to-store radioactive by-products than current fission power plants" says the press release. Currently, estimates suggest that around 16 per cent of the world's electricity is generated by Nuclear Fission. Fission involves the splitting of heavy atoms such as uranium, to release energy. HiPER or High Power laser Energy Research facility is the European research project that runs along similar lines.

Another Ambitious project called LIFE aims to create energy from Nuclear Waste. An acronym for Laser Inertial Fusion Engine, LIFE is an advanced energy concept under development at Lawrence Livermore National Laboratory, and is based on the physics and technology developed by NIF. LIFE has the potential to meet future worldwide energy needs in a safe, sustainable manner without carbon dioxide emissions. By burning nuclear waste for its fuel, LIFE may have the added benefit of reducing the planet's stockpile of spent nuclear fuel and the nuclear

## Cold fusion to heat things up

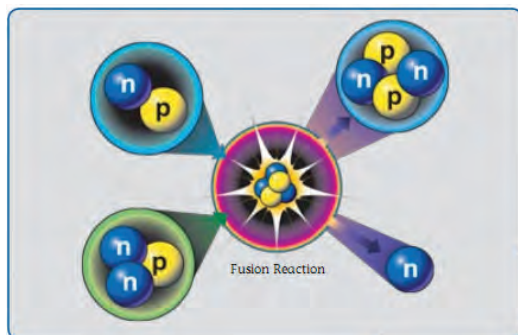
Once relegated to the back alleys of Junk Science, Cold Fusion still remains that unattainable goal. Yet there is renewed interest in the technology and an imminent breakthrough may be on the horizon. Cold Fusion holds the promise of fusion at room temperature or near

room temperature and that too on a table top. When it was announced back in 1989 more than twenty years ago by Martin Fleischmann and Stanley Pons, it shocked the world. But the whole thing was almost instantly discredited when other scientists tried to replicate the demonstration and the

flash in the pan five minutes of fame it received came to an end. The Cold Fusion experiments as we know it are not strictly fusion. What transpires is more of a nuclear effect. Scientists bring together three components of this process – deuterium (which is abundant in sea water), palladium (a platinum like metal) and electricity. The resultant product is 'excess heat', which is what scientists are hoping to create – an output that is greater than the energy supplied to the experiment. The exact process of this nuclear effect is unknown, but stopping research just because something is not fully understood is not what scientists do. Researchers in this field found that there is indeed excess heat – about 20 times higher than the electricity input. However, this so called 'cold fusion' comes with its criticisms and sceptics. First of all, it does not have 100 per cent success rates, and critics are also skeptical about the way in which input/output energy is measured. However, reportedly, a US agency called Defense Advanced Research Projects Agency corroborated that there is indeed excess heat. There are lots of physicists and electro-chemists in labs all over the world researching this subject. As with any technology there is always scope for refinement, and when that eventuality happens, Cold Fusion could be the next big thing, that was revived from the ashes. 

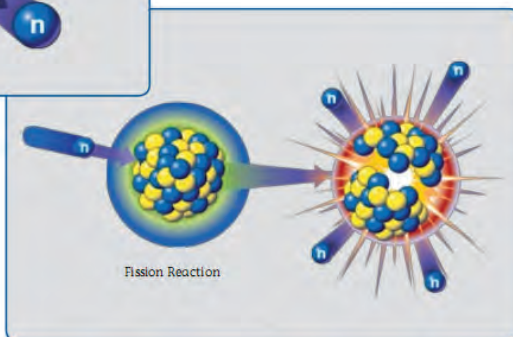
**digit**

Watch out for more  
Green articles next  
month with a  
**special  
surprise!!**



The difference between fusion and fission

lightest element. Deuterium can be extracted from abundant seawater, and tritium will be produced by the transmutation of lithium, a common element in soil. When the two atomic nuclei overcome their natural tendency to repel one another and fuse under the intense temperatures and pressures, a helium nucleus is formed and a small amount of mass lost in the reaction is converted to a large amount of energy according to Einstein's formula  $E=mc^2$ . The National Ignition Facility based in California USA is at the forefront of this research, and released details on one of their press releases. "A fusion power plant would produce no



materials that lend themselves to nuclear proliferation. Once NIF's ultra powered laser completes a successful fusion burn (scheduled for 2010), it will serve as a springboard for LIFE, a hybrid technology that combines the best aspects of nuclear fusion, a clean, inherently safe and virtually unlimited energy source, with fission, a carbon-free, reliable energy technology, according to an NIF announcement.

## Breakthrough in cooling?

There's a new method of making liquid flow vertically along a silicon surface without a pump or any similar mechanism. you can get a look at the latest in CPU cooling technology at <http://bit.ly/cf8SKP>

## New ASUS P55 mobo

ASUS has announced a new, ultra-enthusiast option called the Maximus III Extreme that is reportedly costlier than some X58 options

How stuff works



# Evergreen?

Michael Browne

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**A**MD has good reason to cheer over the past seven months or so. Quite a turnaround from the past couple of years that saw both Intel and NVIDIA sticking it to them repeatedly. AMD's Radeon HD 2xxx series was a downright failure, the HD 3xxx that came soon after bombed badly as well. In a chat we had with Richard Huddy, Senior Manager Developer Relations AMD, at the launch of the Radeon HD 5xxx series last year he said "the 3xxx was actually the starting point for the really strong HD 4xxx series, and it is the HD 4870 that led us here". Evidently they were on the right track with

the direction the architecture and their design ethos was taking.

## A brief look at the family

Evergreen is the codename for AMD's DX11 family. AMD has a full range of DX11 cards, and the introduction of Fermi to the market notwithstanding, AMD is in a strong position because they have DX11 solutions to suit every budget and have had some seven months to iron out inevitable teething issues. The first cards to launch were the Radeon HD 5870 and HD 5850, codenamed Cypress. Then came Hemlock, the HD 5970 — a dual GPU option, consisting of two HD 5870 GPUs, but at lower clock speeds. These are the top-end parts and soon after there came a slew of scaled-down parts.

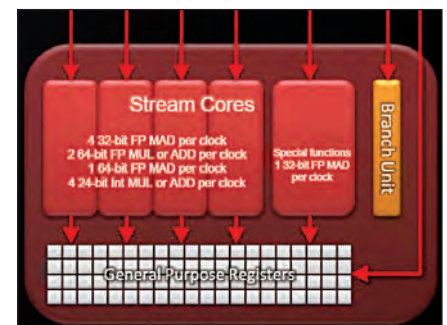
## Meet the family

Codename	Card Name	No of ALUs	Memory / Bus	Price Point
Hemlock	HD 5970	1600 x 2	2 GB, GDDR5 / 256-bit x2	Rs. 40,000
Cypress	HD 5870 / HD 5850 / HD 5830	1600 / 1440 / 1120	1 GB GDDR5 / 256-bit	Rs. 26,000 / 17,000 / 13,000
Juniper	HD 5770 / HD 5750	800 / 720	GDDR5 / 128-bit	Rs. 10,000 / 8,500
Redwood	HD 5670	400	GDDR5 / 128-bit	Rs. 6,500
Redwood	HD 5570	400	GDDR3 / 128-bit	Rs. 4,700
Cedar	HD 5450	80	GDDR2/GDDR3	Rs. 3,500

Last month we looked at NVIDIA's shiny new DX11 offering. AMD has been in this segment for quite a while now, so it's only fair we take a look at the GPU family that almost single-handedly restored their dwindling fortunes

## A look at the GPU

The most touted term in AMD's jargon box has to be TeraScale 2. This simply means the RV870 (the codename for the HD 5870 GPU) is capable of providing over two teraflops of processing power (2.7 teraflops to be exact), which is a 2x hike over the RV770 (Radeon HD 4870). There's a lot more hierarchy to the GPU



One thread processor consists of 4 ALUs and one SFU (Special Function Unit)

block design compared to predecessors. This is obviously required thanks to the doubling of the ALU count. A modular architecture is the only way to go for scalability. The 1600 SPs on the HD 5870 are thus divided into 20 SIMD engines. Each SIMD engine has 16 thread processors. Each thread processor has five stream cores. This looks pretty similar to the RV770 (HD 4870). But there are a number of small under-the-hood changes.

One thing remains unchanged. ATI's thread processor still consists of four ALUs and one special function unit, and therefore doesn't consist of 5 SPs in the truest sense of the term. The ratio



Complete with custom PCB, chokes, caps and cooling, Sapphire's Toxic HD 5850 promises more of the Cypress goodness we've got a taste of

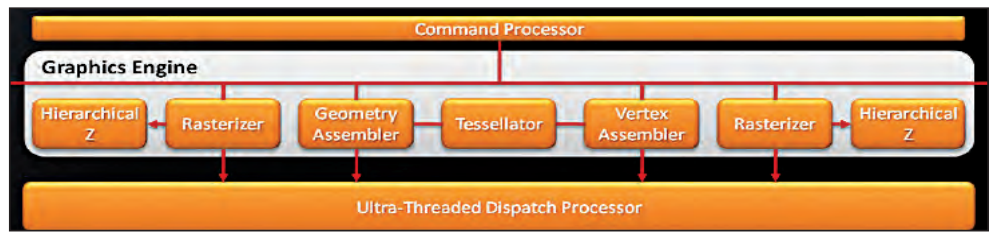
## How stuff works

of AMD SPs to NVIDIA SPs is something like 5:1. Therefore, for a practical comparison, the HD 5870 can be said to have 1600/5 or 320 SPs, while NVIDIA GTX 285 has 240. Those who are familiar with comparative benchmarks will agree, for despite the boast of 1600 SPs, the HD 5870 is not five times faster than the GTX 285. The GTX 480 has 480 SPs, though we won't know for sure till after the launch thanks to NVIDIA's secrecy. To feed the extra SPs, the HD 5870 has double the L2 cache size — 128 KB, up from 64 KB on the HD 4870.

There's also a doubling of texture units from the HD 4870, the count is now at 80. The texture units are now right next to the thread processors instead of being linked, so if AMD adds more thread processors, the texture units

digit

Watch out for the May issue where we test the hottest desktops and camcorders your money can buy



This is the part AMD calls the Graphics Engine. It consists of Tessellator and Raster Units among others

will also go up. For every SIMD engine, there are four texture units.

## The graphics engine

The HD 4870 had a Tessellator, but this cursory addition has seen a major overhaul with the addition of Hull and Domain Shaders giving it full DX11 compliance. AMD has also added an algorithm to reduce tessellation artifacts and there are two Tessellator units instead of one. There are also two Raster units, obviously necessary to feed double the SPs.

## USB 3.0 in demand

NEC plans to double their production of USB 3.0 controllers due to the high demand. Hopefully that means we'll see more of it on value motherboards

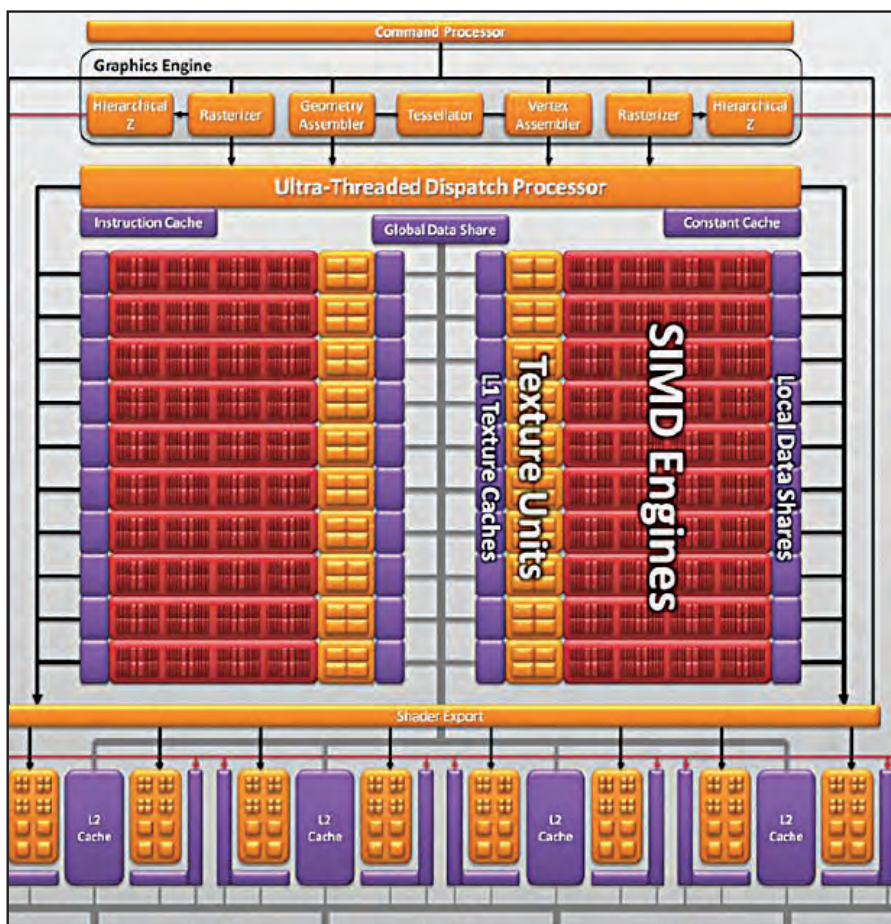
Among other DX11-specific instructions that have been added, a new instruction called SAD or sum of absolute differences is also supported. This is of great importance in (among other applications) video encoding. This instruction is used in motion estimation between adjacent frames and previously emulation of this function required 12 clock cycles; now this is down to one cycle — resulting in a 2x boost to video encoding speed.

## Benefits all round

DX11 and a compliant card is a good thing to have for most users. Tessellation, along with the Hull Shader and Domain Shader translate to improved image quality via injection of extra details in a scene at a minimal performance hit. NVIDIA has also taken Tessellation seriously with their GF100-based GPUs, but AMD gets a victor point here for being the pioneer and pushing the technology even before it was a part of the Direct X spec-sheet.

The Compute Shader is another notable addition. This allows programs to access the GPU and treat it like a generic processor rather than a graphics processor. This is what we know as the *GPGPU* concept and while we haven't gotten there fully, this is a notable step forward. The Compute Shader is used by games and non-game applications and is also known as DirectCompute, so do not let the jargon confuse you.

One of the more exciting features that AMD is really pushing is OIT or Order Independent Transparency. This will really make gamers happy. The example of OIT benefitting gamers that Richard Huddy gave us was the result of feedback from a major game developer. They wanted a way to be able to properly render a transparent dragon crossing a river and breathing fire on to



The block diagram for the Radeon HD 5870

## Futuremark goes DX11

Futuremark Corp. is prepping a new DX11 benchmark, given the buzz around DX11. We look forward to benchmarking using that in future tests

## New 125\$ SSD

Intel has launched their X25-V with a capacity of 40 GB priced at 125 dollars and aimed at entry-level budgets. Maybe we can all finally afford one

How stuff works

the water. This is something that isn't possible unless OIT is used.

This feature uses the Compute Shader to sort/arrange transparent textures in a single pass so that they can be rendered in the correct order to be displayed on-screen. This was possible using Pixel Shaders earlier, but resulted in a tremendous performance hit. With OIT onboard, you will now see a lot of realism in certain scenes and while many gamers will not have missed its benefits, once you have seen what a game can look like, there's no looking back. Texture sizes have also been bumped up, this stands at 16000 x 16000 pixels i.e. 256 megapixels — that's a lot!

Extreme gamers will also cheer, for Supersample AA (SSAA) makes a comeback. One of the reasons this mode of AA was left out in earlier cards was the huge performance hit. Therefore Multisample AA (MSAA) and Adaptive AA (AAA) were used but these had a few shortcomings. Thanks to the 2x processing capability, the HD 5xxx series feature SSAA. The HD 5xxx series also feature true Angle-Independent Anisotropic Filtering (AIAF) resulting in much improved visual quality with less artifacts and other visual anomalies.

AMD also built in support for up to 6 displays on each GPU. Although whether or not your card can do this depends on whether the card has six outputs. Support for 6 displays has also been built into the Catalyst driver. Even hooking up three displays is quite a treat as all the

display outputs can be configured into one single display surface, which to Windows, appears as a single monitor with a super high resolution. Gaming on such a set up is immense fun as you can well believe.

## Performance-per-watt anyone?


This was a phrase that AMD used a lot for their CPUs. However, power consumption is becoming more of a factor for GPUs especially given they consume three times the power of today's CPUs. Although power consumption on load has gone up on the HD 5870, but it is a marginal increment over the HD 4870, and the performance increment is much higher aka more performance per watt. Interestingly, thanks to power saving features implemented, the power draw on idle is down to just 27 watts, this was in excess of 80 watts on the HD 4870. As a result of this, as well as the 40nm fabrication process, the HD 5870 is a cool running card, you might even say its tropicalised!

## It's good to be a gamer right now

DX11 was designed as a lighter DX10 with a few visual enhancements and a lot of features aimed at making development on this platform easier. We've already tested cards based on nearly all AMD 5xxx series of GPUs and we're happy to report that AMD has a solid



Notice the different transparent layers and how one overlaps the other. The order of arranging the layers is important for realism, this is what OIT handles — which is the top layer, which is just beneath that and so on

DX11 line-up. The performance of the HD 5870 is sufficiently incremental to the HD 4870 for us to recommend it, even if DX11 were to be taken out of the equation and a similar scenario exists for the entire lineup. And the sales figures corroborate our assumption as AMD has enjoyed a good last six months. But *the times are a changin'* to borrow a cliché and NVIDIA is very close to a market release of their own DX11 card. They've announced the GTX 480 and GTX 470 cards and we've taken a look at this GPUs innards last month in a similar article. Needless to say — it's quite impressive, at least on paper for the time being. So the future of PC gaming is looking very bright, a suitable snub to all doomsday prophesiers and PC haters alike. There's a lot to be hopeful for, if you're a PC gamer — DX11 games are slowly trickling out of studios around the world, we've played some of them and are most impressed. And then NVIDIA is joining the fray shortly. Hopefully the next few months will see some much needed competition to get prices down to bare minimum levels. 



Eyefinity with 6 monitors — A new level of immersion





## Making the right call

**Agent 001 is on a mission to find three very different smartphones for three very different users, on three very different budgets**

and a fast processor. I cautioned astronomical prices – my pleas fell on deaf ears. Rossi, being a robotically efficient Quake 3 fragger, had to have an Android phone. Wi-Fi was a must, as was a touchscreen. A QWERTY keypad was necessary as well. His budget was up to Rs. 20,000; slightly upwardly flexible for deserving products. Thus, I had my work cut out for me.

There are a lot of new brands entering the market, but most of these have entry-level options, which is a safe way to “test waters”, rather than going all out with high-end stuff. Google’s Android is a new, exciting platform that includes the OS and supporting applications. It is a platform geared towards online connectivity but there are some pretty basic and glaring flaws – handsfree dialling and call answering support is dodgy. Android’s

latest avatar 2.1 (Éclair) is due in April. Windows Mobile 6.5 is hardly different from WM6 and even WM5 in terms of interface. WM7 is expected to radically change things with native support for capacitive screens and is due in September. Nokia has finally ditched Symbian in favour of Maemo, which, like Android, also borrows its design heavily from Linux.

### Usability is what it’s all about:

In terms of handsets, touchscreens are hot and universally desired, although not everybody realises that a flawed design can render a touchscreen phone nigh unusable. Touch designs are resistive

or capacitive, the former being suited for use with pointed objects – stylus, fingernails. Capacitive touch displays work with fingers, and are therefore the more usable of the two. Whether it be for typing out on an on-screen keypad or swiping through menus using gestures and strokes on-screen, capacitive touch displays are the way to go. Anyone who has used an iPhone can testify to its ergonomics – Apple has a flawed handset, but a nearly flawless interface. Sure, HTC has their Touch Flo interface – designed to give WM-based resistive touch devices a semblance a gesture-based interface but this cannot compete with an interface designed from scratch to be touch and gesture based.

The interface of any phone is very important. With high-end handsets, even more so, and this fact is usually overlooked. We get so carried away with 8 megapixel cameras and 16 GB of internal storage that we forget all about convenience of usage, which is everything for a handset in my opinion. Theoretically, if we could choose a handset with all possible interfaces – a hardware QWERTY keypad and touchscreen and maybe a good on-screen number keypad there would be no problem. Practically this is usually costly. Also sometimes, phones that cover all interface options do a shoddy job – a quirky keypad and an interface not designed with gestures in mind would render even a 4-inch capacitive touch-based phone with all the works useless. What I’m trying to say is, the presence of a QWERTY keypad (for instance) doesn’t guarantee a phone will be great for SMS junkies. A large touchscreen phone may be bogged down with slow hardware or even an unintuitive interface. Some phones get it smack on, others flounder. That being said, I’ve loved some quirky handsets in the past – cellphones are so personal, that it’s often

**T**his month, I was at a complete loss at which product group to write about – an unusual situation. But as with everything at Digit, a solution is never far away. Inspiration – three of us, namely Siddharth, Michael and Rossi were looking at purchasing cellphones, though each had different needs. Siddharth could spend Rs. 15,000 and he specifically wanted a QWERTY keypad, a 3.5mm jack, a 2.8-inch display or thereabouts. But a touchscreen was not mandatory. Helpful widgets were a must. Michael craved a touchscreen. He needed a large display, and wanted a good camera and great music playback abilities. Wi-Fi was also desirable, as was adequate memory

## Satio gets WVGA recording

Sony Ericsson's Satio gets video recording resolution up to 864 x 480 pixels with a firmware update. We've tested it this month – check our bazaar section

## Map Loader on N900

Nokia's N900 internet tablet finally gets a map loader

Agent 001

hard to determine what one loves – the adage “there’s no accounting for taste” comes to mind.

That weekend I hopped aboard my bike and took a quick trip to a few cellphone shops around. Alpha, a well-known, perennially jam-packed shop selling handsets was first on my list. These guys sell stuff both with and without bills, the latter is something one refers to as a grey market purchase. The difference is, a bill nets you a warranty, while a product without bill generally does not. The exception being brands like Apple that provide warranty on IMEI numbers, not bills and receipts. Among other handsets I came across the LG KM900 Arena. We tested this phone last year; it’s got a very good interface, an ultra crisp 3.0-inch capacitive touch display and a really nice camera. The interface is also slick, and an obvious rip-off from the iPhone. I was surprised to find it available for as low as Rs. 17,500 – a very good deal for those looking at a multimedia phone.

## Siddharth: the SMS junkie

The Nokia E72 was also on display, priced at Rs 17,900. This is a beautiful handset – very solid with a thick metal battery cover. The QWERTY keypad is surprisingly tactile and comfortable to use and will make sending mails a snap, while goodies like Wi-Fi, a five-megapixel camera and a 3.5mm audio jack ensure its universal appeal. Then I came across its older sister, the Nokia E75. This model is special because it has both a hardware number keypad and a QWERTY keypad that slides out from the side. This coupled with the metal battery cover and solid build make it a heavy phone. Despite the two keypads, the phone isn’t as sweet a deal as the E72 and I don’t recommend it. Why? – Because the QWERTY keys are flat, devoid of bevelling and lack tactility and the battery is a measly 1000 mAh, unlike the E72, that has a nice 1500 mAh battery. I also saw the Blackberry Curve 8900 priced at Rs. 18,500. The Curve is another sweet handset, although I feel Blackberry’s interface leaves a lot to be desired – their menus are so complicated. The keypad is excellent though

– superb for SMS junkies. Sony Ericsson’s XPERIA X1 is still available – a good handset, with speedy processing. The QWERTY keypad is a mixed deal – some like it, others don’t. It was priced attractively at Rs. 21,600. I felt the E72 would be a better deal and would be longer lasting. So I called up Siddharth, he wasn’t happy about the price, but relented.


## Rossi: the Android addict

Finding an Android-based handset for a good price proved difficult. The HTC Hero was the only one that was available, priced at Rs. 23,000. When I asked the dealer about street prices i.e. without a bill, he said I would save 10 per cent but lose the warranty. After having a quick brunch at McDonalds, I walked into an outlet of The Mobile Store. They had the N97 Mini on display. Priced at just above Rs. 22,500 the N97 Mini is a pretty decent package, although having reviewed it I can say Nokia’s resistive touch-based interface sucks. Samsung’s B7320 OmniaPRO was also available for a mere 11,500 bucks – a decent price, but the lack of a touchscreen on a WM device is kind of pointless. The QWERTY keypad is pretty good though. The Nokia 5800 XpressMusic is another worthy priced at the 13,000-rupee mark; a decent touch phone, pretty compact and has good battery life – good for someone looking at a music phone with decent features, although the touch interface is laggy and not as intuitive as I’d like. There were a bevy of other Nokia N Series phones like the N79 and N86 available – none caught my fancy. Symbian as a platform is on its way out, and I recommend against investing in a high-end Symbian device. I couldn’t find an Android-based device for Rossi, although there were some other alternatives like the SE XPERIA X1 and X2 – both with QWERTY keypads, but he didn’t want another WM device.

## Michael: The gadget freak

The HTC Touch HD2 caught my eye. I’ve never seen such a huge screen – this makes the device pretty big too, but it’s not unmanageably so. The HD2 is a sexy handset – WM 6.5, a capacitive touch interface and really snappy hardware under the hood. The touch interface works flawlessly, gestures, typing; everything has a nice feel and the large screen is a pleasure to behold and use. At Rs. 35,800, the Touch HD2 was right up Michael’s alley, but he told me that he didn’t want WM 6.5 and if he bought a WM device again, it would be WM 7-based. Well, I agree, although HTC uses a proprietary multi-touch UI, this is not as fluid or intuitive as an interface designed natively for a touch/gesture interface. One

handset that might fit the mould would be the yet unseen Sony Ericsson XPERIA X10. Based on Android 1.6, this handset promises a lot – a 4-inch touchscreen, good camera and music capabilities and a very fast processor. He told me he was waiting for this handset and WM 7 devices before taking the plunge.

I recommend people interested in buying a high-end handset in the range of 25,000 bucks do the same i.e. wait. The market is in a state of flux – capacitive touchscreens are taking over, and devices based on newer, more fluid interfaces will become available at more competitive prices. For me, the ideal touch device is one that doesn’t make me miss a hardware keypad, and in this regard, I’ve yet to come across such a device. WM 7 *should* answer a lot of queries as Microsoft has promised a complete overhaul and a completely new interface without the horrible Start menu system carried over from their PC OS. This year and the whole of 2011, should see an influx of newer, more powerful multimedia phones, we’re at the tip of the iceberg. 





## LGs Panther

LG has unveiled their first WM7 phone. They're calling it panther

## Native Opera Mini for WM

A native version of Opera Mini for WM has been released, removing the need for Java dependency

**Q** What is the difference between AMD & Intel processors? Which processor is best for gaming? What is the PC configuration for gaming that should not exceed Rs 50,000

B Venkatesh

**A** Both a different brands, with different design ethos making products for the same x86-computing platform. So while their products are different in terms of design, they are designed around certain parameters that are not so different. For gaming I would recommend going with a Core i7 system. Suggested system configuration is:

Phenom X4 945	8100
ASUS M4A78-PRO	5850
2 x 2GB DDR2 800 MHz (Corsair)	4000
Sapphire Radeon HD 4850	6900
Seagate 1 TB 7200.12	3600
BenQ G2220HD	9200
CoolerMaster 690	4400
Corsair VX 450	3800
Altec Lansing VS2421	2200
Logitech Multimedia	500
Logitech MX518	1300
<b>Total</b>	<b>49850</b>

**Q** Which brand would you suggest me to go for Dell or Lenovo? The 2958G6Q from Lenovo looks good to me with the required configuration. The same configuration in Dell is expensive. But my friends suggest me to go for Dell as they say that Lenovo parts are not reliable. I would like to know your opinion.

Mann NS

**A** Both a large brands with a pretty good service network and spread across the country. Reliability is not an easy factor to comment on. I would go with the cheaper of the two alternatives, other things remaining the same. Check for warranty periods – Dell does have extended warranty options, check and see if Lenovo can swing you a similar deal, their warranties are typically one or two years – Dells are three and five years.

**Q** I am planning to buy a laptop for 60k. I am mainly going to use it for surfing, gaming and for multimedia (watch and edit movies, live streaming,

listening to music). What is the better one? Sony VAIO CW Series or Lenovo Ideapad Y730 or Dell Studio 15. Please help me to choose one. Also recommend me another models within this price range (with only Intel processors.)

Selvakumar

**A** The notebooks you have mentioned are all pretty different, albeit with somewhat similar configs. The Lenovo is a 17-inch solution aimed at gamers, the Studio 15 is aimed at users wanting a powerful configuration not for gaming while the Vaio CW is a series with 14-inch screens and a little more focus on styling. If you are moving around and plan to cart your notebook around, I recommend the Vaio CW. If this is a desktop replacement, get the Lenovo Y730. Whichever configuration you choose, for gaming, make sure you have a good graphics solution and 3 or 4 GB of memory.

**Q** I'm looking for a music phone, my budget is upto 8000. I would ideally like a Nokia phone.

Bharat Razdan

**A** I would recommend either Nokia's 5230 or their X3. The latter is a music phone, and has a neat slider form factor. The latter is derived from the 5800 XpressMusic – a decent phone. It has a larger screen that is touch-based. Totally depends on which you prefer. Both will be within your budget.

**Q** I am planning to buy a wireless router and my budget is Rs. 3,000 to 4,000. The router should have good range and should be fast. I have 512 kbps Internet connection.

Farooq Ahmed Khan

**A** Firstly, even if you had a 20 mbps Internet connection, a router would easily handle that transfer rate. The concept of a router slowing down your Internet connection due to its internal bandwidth is totally wrong – unless it is horribly placed or you have a really sprawling palatial house. I would recommend Linksys' WRT120N priced at Rs. 2,550 – this will more than suffice.

**Q** I have an Intel DG33 motherboard, but the on-board graphics cannot play many games like Turok, Fallout-3, Crysis etc. So, I am going to buy a graphics card within a budget of Rs. 5000.

Also the card should run in my humble 450 Watt Frontech SMPS. I am confused about the following points.

Although this card is said as the newer 9th generation card, the price of an older 8800 is higher than the 9400 or 9600 ones. Also there is the GS, GTS and GTX tags which adds to my confusion.

2. Games like 'Crysis' requires 6800GT equivalent card. How do I compare this equivalence in the 9000 series cards?

3. Compared to the 9400GT, the price of 9600GT is very high, almost twice. Is there any substantial advantage of a 9600GT over the 9400 ones?


Kindly suggest a good selection, or should I go for the latest 200 series cards, increasing the budget? I am not an avid gamer, the card should just be able to run most of the games in playable condition – that is my only requirement.

Anupom Bora, Assam.

**A** The G33 is not even enough to play very basic 3D games. For Rs. 5,000 you can easily pick up a GeForce 9600 GT. Look for brands like ZOTAC or Palit, I suggest ZOTAC for they are very reliable. If you increase your budget to say Rs. 6,500 you could also pick up a Sapphire Radeon HD 4850 – an older card, but a pretty powerful one. In response to your queries:

The prices of 8 series cards are higher, because they were costlier to manufacture, their GPUs being made on an older, bigger fabrication process. They are also EOL (End Of Life), which means vendors can price them at whatever they wish.

2). The 9xxx series is much more powerful, not really a fair comparison i.e. products being three generations apart.

3). I surprised that the 9400GT was priced as high as 5K in Assam. It's available for as little as Rs. 3,000 here. The 9600GT is a much better part, that will give you at least 2x the performance. Go for 512 MB DDR3 memory, a 1 GB part is of little use on such low-to-mid-range GPUs. 

# KILLER RIGS

everything you will ever need to build your own PC. whatever your budget.

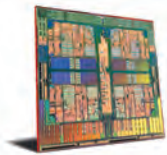
■ Basic rig = Rs. 22,050

■ Multimedia cum gaming rig = Rs. 34,950

■ High-end PC / Gaming rig = Rs. 54,850

■ Ultra high-end PC / Gaming rig = Rs. 1,28,310

## PRIMARY COMPONENTS



### PROCESSOR

- AMD AthlonII X2 240 / Rs. 3,000
- AMD Athlon 2 X4 620 / Rs. 5,050
- Phenom X4 945 / Rs. 8,100
- Intel Core i7 920 / Rs. 14,400



### MOTHERBOARD

- ASUS NVIDIA 7025 M2N68-AM / Rs. 2,250
- Gigabyte MA78GM-US2H / Rs. 4,200
- ASUS M4A78-PRO / Rs. 5,850
- MSI X58 Pro-E / Rs. 11,400



### RAM

- 2 x 1 GB DDR2 800 MHz (Kingston) / Rs. 2,000
- 2 x 1 GB DDR2 800 MHz (Kingston) / Rs. 2,000
- 2 x 2GB DDR2 800 MHz (Corsair) / Rs. 4,000
- 2 x 3 GB Kingston HyperX T1 2000 MHz DDR3 / Rs. 17,500

### GRAPHICS CARD

- None
- ZOTAC GeForce 9600GT / Rs. 4,750
- Sapphire Radeon HD 4850 / Rs. 6,900
- Sapphire Radeon HD 5870 / Rs. 25,500



### HARD DRIVE



- Seagate 500 GB 7200.11 / Rs. 2800
- Seagate 500 GB 7200.11 / Rs. 2,800
- Seagate 1 TB 7200.12 / Rs. 3,600
- WD Black Edition 1 TB / Rs. 6,500

### MONITOR

- Acer H203H / Rs. 7,250
- BenQ G2220HD / Rs. 9,200
- BenQ G2220HD / Rs. 9,200
- BenQ G2420HD / Rs. 12,500



## CABINET



- Zebronic Antibiotic / Rs. 2,100
- Zebronic Antibiotic / Rs. 2,100
- CoolerMaster 690 / Rs. 4,400
- Antec 900 / Rs. 6,500

## SOUND CARD

- None
- None
- None
- ASUS Xonar DX / Rs. 3,700



## SECONDARY COMPONENTS

### POWER SUPPLY



- VIP 350 Watts / Rs. 850
- VIP 400W Gold / Rs. 850
- Corsair VX 450 / Rs. 3,800
- Corsair HX 620 / Rs. 7,100

### SPEAKER



- None
- Altec Lansing VS2421 / Rs. 2,200
- Altec Lansing VS2421 / Rs. 2,200
- Altec Lansing MX 5021 / Rs. 6,500

### MOUSE



- Logitech 3 button scroll / Rs. 300
- Logitech 3 button scroll / Rs. 300
- Logitech MX518 / Rs. 1,300
- Logitech MX518 / Rs. 1,300

### OPTICAL DRIVE



- LG H55N / Rs. 1,100
- LG H55N / Rs. 1,100
- LG H55N / Rs. 1,100
- ASUS BC-1205PT / Rs. 11,010



### KEYBOARD

- Logitech Multimedia / Rs. 400
- Logitech Multimedia / Rs. 400
- Logitech G15 / Rs. 4,400
- Logitech G15 / Rs. 4,400

## MISCELLANEOUS

### TABLET



- None
- iBall Design Tablet PF1209 / Rs. 8,900
- Wacom Intuos4 Medium (PTK-640) / Rs. 21,280

### MOUSEPAD



- None
- Razer Goliathus Speed (Oversized) / Rs. 1,400
- Steel Series Qck Heavy / Rs. 2,000

### HEADPHONES



- None
- Sennheiser HD 201 / Rs. 1,500
- Sennheiser HD 280 Pro / Rs. 5,500

### GAMING CONTROLLERS



- Xbox 360 controller / Rs. 1,350
- Logitech Momo / Rs. 5,500
- Logitech G25 / Rs. 17,500

### PRINTING SOLUTIONS



- Canon PIXMA iPi1980 / Rs. 2,695
- Canon iP3680 / Rs. 5,595
- Epson B-500DN / Rs. 22,999

### POWER PROTECTION



- None
- APC 550W / Rs. 2,400
- Numeric 1 KVA / Rs. 4,200



# Spend smart

The latest peripheral prices updated every month. Go ahead, plan your configuration today



## Digital Cameras

Model	Market Price	Tested in	Sensor	Optical Zoom	LCD Screen Size
Canon Powershot SX120	Rs. 14,995	October 2009	10 MP	10x	3.0 inches
Canon IXUS 100IS	Rs. 12,999	October 2009	12 MP	3x	2.5 inches
Canon Powershot A480	Rs. 7,499	October 2009	10 MP	3.3x	2.5 inches
Canon A1100IS	Rs. 9,499	October 2009	12 MP	4x	2.5 inches
Canon IXUS 951S	Rs. 10,500	October 2009	10 MP	3x	2.5 inches
Canon SX200IS ( <b>BEST PERFORMER</b> )	Rs. 21,500	October 2009	12 MP	12x	3.0 inches
FujiFilm FinePix F200	Rs. 17,999	October 2009	12 MP	5x	3.0 inches
FujiFilm FinePix S1500	Rs. 12,500	October 2009	10 MP	12x	2.7 inches
Kodak C140	Rs. 4,999		8 MP	3x	2.4 inches
Nikon P90	Rs. 23,995	October 2009	12 MP	24x	3.0 inches
Nikon Coolpix L20	Rs. 7,750	October 2009	10 MP	3.6x	3.0 inches
Nikon S220	Rs. 8,500	October 2009	10 MP	3x	2.5 inches
Olympus FE25	Rs. 5,995		10 MP	3x	2.4 inches
Panasonic FS4	Rs. 6,750		8 MP	4x	2.5 inches
Samsung ES55 ( <b>BEST BUY</b> )	Rs. 6,990	October 2009	10 MP	3x	2.5 inches
Sony HX1	Rs. 29,800	October 2009	9 MP	20x	3.0 inches
Sony S930	Rs. 7,800		10 MP	3x	2.4 inches
Sony H20	Rs. 17,500		10 MP	10x	3.0 inches



## External HDDs

Model	Market Price	Capacity	Interface	Warranty (Years)
Seagate Freeagent GO	Rs. 5,150	500 GB	USB	5 years
Seagate Freeagent GO	Rs. 3,250	250 GB	USB	5 years
Maxtor One Touch 4 Mini	Rs. 3,200	250 GB	USB	5 years
Transcend StoreJet	Rs. 2,725	160 GB	USB	2 years
Western Digital MyPassport	Rs. 2,850	160 GB	USB	3 years
Western Digital MyPassport Essential	Rs. 4,100	640 GB	USB	3 years
Western Digital MyPassport Studio Edition	Rs. 7,800	1 TB	USB, FireWire, eSATA	3 years



## Input Devices

Model	Market Price	Tested In	Features / Technology	Interface
Microsoft Wireless Optical Desktop 1000	Rs. 1,950	NA	Wireless (optical mouse)	RF
Microsoft Wireless Optical Desktop 700 V2	Rs. 1,400	NA	Wireless (optical mouse)	RF
Logitech Internet Pro Desktop	Rs. 750	NA	Optical Mouse	USB 2.0
Logitech Cordless Desktop MX5500	Rs. 10,800	NA	Bluetooth, laser mouse with extra buttons, LCD display on keyboard	RF (Bluetooth)
Logitech Cordless Desktop Wave	Rs. 4,650	NA	Ergonomic keyboard, with soft palm rest, laser mouse	RF
Logitech Wireless Desktop MK250	Rs. 1,200	NA	Wireless (optical mouse)	RF
Zebronics Mmkeyboard + Mouse	Rs. 450	NA	Optical mouse	USB
Microsoft Wired Desktop 600	Rs. 850	NA	Optical mouse	USB
Belkin n52te	Rs. 3,500	February 2010	Gamepad, macro keys	USB
Logitech G13 Advanced Gameboard	Rs. 4,000	NA	Gamepad, macro keys, LCD display	USB
Logitech G15 gaming keyboard	Rs. 4,400	NA	Macro keys, backlit display	USB
Microsoft Sindewinder X6 keyboard	Rs. 3,600	NA	Backlit keys, macro keys	USB
Microsoft Sidewinder X5	Rs. 2,400	NA	2000 dpi, laser sensor mouse	USB
Logitech MX 518	Rs. 1,300	NA	1800 dpi, IR sensor mouse	USB
Logitech G5	Rs. 2,200	NA	2000 dpi, laser sensor mouse	USB

## Satio gets WVGA recording

Sony Ericsson's Satio gets video recording resolution up to 864 x 480 pixels with a firmware update

## Disabled Cars?

A disgruntled former employee wirelessly disabled over 100 cars in Austin, Texas by hacking the inbuilt wireless immobilisation system

Price watch

### Power supplies

Model	Price	Tested in	Capacity	Modular
Cooler Master Real Power Pro 460W	Rs. 3,705		460W	N
Cooler Master eXtreme Power 650W	Rs. 4,200		650W	N
Corsair CX400W	Rs. 3,200	September 2009	400W	N
Corsair HX620W	Rs. 7,650		620W	Y
Corsair TX650W	Rs. 6,700		650W	N
Corsair VX450W	Rs. 3,950		450W	N
Corsair VX550W	Rs. 5,700		550W	N
FSP Blue Storm Pro 500	Rs. 3,650		500W	N
Seasonic PS S12II-430	Rs. 3,850		430W	N
Silverstone 400W	Rs. 3,100		400W	N
VIP 600W	Rs. 2,900		600W	N
Zebronics Pro 600W	Rs. 4,000		600W	N



### Cabinets

Model	Price	Tested in	5.25-inch bays	3.5-inch bays	Bundled fans	Expansion slots
Antec Nine Hundred	Rs. 7,100		6	3	4	7
Antec NSK4400	Rs. 1,700	May 2008	3	5	1	7
Antec Three Hundred	Rs. 3,900	October 2008	3	6	2	7
Cooler Master 690 (with sidepanel)	Rs. 5,000		5	5	3	7
Cooler Master ATCS 840	Rs. 16,100	November 2009	6	7	4	7
Cooler Master Cosmos	Rs. 15,000		5	6	1	7
Cooler Master Elite 100	Rs. 3,100		1	1	0	0
Cooler Master Elite 310	Rs. 1,600		4	7	1	7
Cooler Master HAF 932	Rs. 10,000		6	6	4	7
iBall Baby 306	Rs. 2,000		1	3	2	0
Thermaltake Armor+	Rs. 13,700		7	7	3	10
Thermaltake Armor+MX	Rs. 7,800		5	5	3	7
Thermaltake M9	Rs. 4,800		6	3	2	7



### Cell Phones

Model	Price	Tested in	Screen size	Camera resolution	Platform
HTC Hero	Rs. 26,500	February 2010	3.2-inch	5 MP	Android 1.5
HTC Touch HD	Rs. 33,000		3.8-inch	5 MP	Windows Mobile 6.1
LG KP500	Rs. 7,300	June 2009	3.0-inch	3.15 MP	-
Nokia E55	Rs. 17,000		2.4-inch	3.2 MP	Symbian S60
Nokia E63	Rs. 9,700	November 2009	2.36-inch	2 MP	Symbian S60
Nokia E71	Rs. 15,700		2.36-inch	3.15 MP	Symbian S60
Nokia E72	Rs. 19,500		2.36-inch	5 MP	Symbian S60
Nokia N97	Rs. 31,000	August 2009	3.5-inch	5 MP	Symbian S60
Nokia XpressMusic 5330	Rs. 10,000		2.4-inch	3.15 MP	-
Nokia XpressMusic 5800	Rs. 14,000		3.2-inch	3.15 MP	-
Samsung Omnia HD i8910	Rs. 29,500		3.7-inch	8 MP	Symbian S60
Sony Ericsson Satio	Rs. 30,000		3.5-inch	12 MP	Symbian S60
Sony Ericsson Yari	Rs. 12,800	February 2010	2.4-inch	5 MP	-



**Choose wisely**

Before you purchase a product, try and find out about available servicing options. Also, do not forget to get a bill for your purchase

For advice and information on  
consumer rights, visit  
[consumermate.com](http://consumermate.com)

Dear Sir,

Thank you for your article on Consumer Protection in the December issue of Digit. I purchased an N72 Nokia cellphone on April 08, 2009. I experienced faults such as blank display on 11-05-2009, but they returned the phone to me mentioning the fault as boot failure and saying it's irreparable. The details are as follows:

Service job sheet number: 31346550/090511/2

(May 11, 2009)

IMEI Number: 356295014025833

Product Code: 0531541

Job Warranty: No

Model Name: N72

Service Invoice: 4217 (May 30, 2009)

Remarks: Boot failure

Please guide me for further action.

Regards,

Srirengam V

Ariyalur

Attached:

Service Job sheet

Service invoice

We all have a right to be safe. However, taking necessary precautions is our duty as a consumer. In the same light, educating us on safe practices lies with the product manufacturer. Avoid using a product in unhealthy or destructive environments by knowing its operating specifications. Even if you get the best coverage near your local petrol pump, it may still not be the best place to talk. Your cellphone's user manual also specifies the same and is laced with advisories.

Be aware of your rights and duties as a consumer. Rights to prevent abuse and being taken for a ride. At the same, it is our duty to stay safe. Most warranties and guarantees absolve companies from any liability arising out of alteration to the product from the user's end. If you have opened your PMP yourself in a fit of rage, the company is not liable to you anymore to ensure a satisfactory audio experience.

India's consumer forums are in place too, but one aspect where we lack is general awareness. There are Consumer Redressal Forums in the country to address our concerns surrounding consumer rights. We'd agree to the fact – laws are futile without adequate policing. However, what use is effective policing when there's a lack of general public awareness?

Hundreds of you have written to us complaining on different companies. We followed up on one such letter from Srirengam who is based in Ariyalur, Chennai. We spoke to Srirengam, who seemed to have lost hope in being helped out with his faulty phone. Around a year after buying the phone, it started blanking out.

In May 2009, Srirengam sent it to the Nokia service personnel. However they returned it to him saying the problem cannot be rectified. We forwarded this letter to Nokia. We will continue our follow-up. Meanwhile, if any of you have similar experiences, please do let us know. Drop in an email at [servicewatch@thinkdigit.com](mailto:servicewatch@thinkdigit.com) and we'll take up your issue with the concerned authorities. **d**

# Wake up, be wise

**We've heard a lot about consumer rights all through the ages. It's time to wake up and stand up for yourself!**

Nash David

[servicewatch@thinkdigit.com](mailto:servicewatch@thinkdigit.com)

**C**onsumer is king. We hear such promising phrases practically everywhere we move. Way back in 1962, US President John F. Kennedy equipped Americans with six powerful rights – the right to be safe, choose freely, be heard, stay informed, be educated, and the right to service.

Welcome to democracy, a world where citizens have freedom, liberty and equality in all choices they make. This is inherent, and more so in a free world. Be it batteries exploding or laptops overheating, the least we

expect is corrective surgery to retain our sanity. Be it America, or the world's largest democracy – India – an individual can never be denied his/her rights. What we need, is increased awareness. In fact, that's exactly the aim of those advertisements on television that are “issued in public interest” by the Government of India. We should be watching diligently rather than mocking them.

These advertisements tell us to be wise, watchful and look for crucial information on the product label such as warranty details. We should do our part rather than scoff at something we consider too lame. Even insisting on a bill is a basic consumer right.

## Google Buzz

Less than a week after it was released on February 9, 2010, Google Buzz was strongly criticised for the lack of privacy in displaying your list of followers to the world. Here are a few tips to remedy that and do much more with Google Buzz.



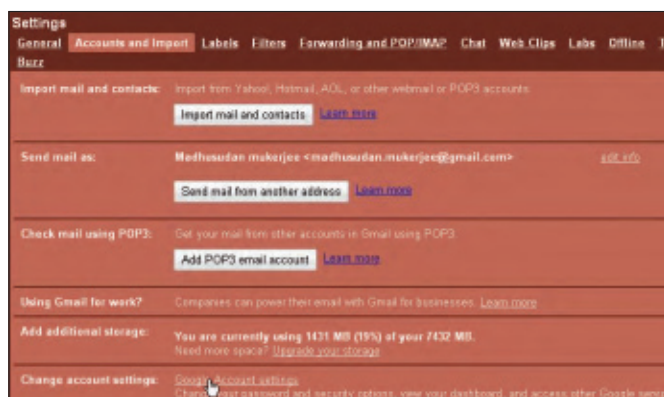
The latest buzz on the web

### Hide Followers

Chances are that you've got a Gmail account but don't know that you've got a Google Profile too. Google Profiles were meant to function as personal business cards of a sort but Buzz



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Changing settings

hijacked the list of your chat friends and set them up for everyone to see. If you don't want this to happen, it's really simple to hide the people who follow your buzzes. Once you log in to your Gmail account, just click on the 'Settings' link on the top right corner of the Gmail window. Click on Accounts and Import > Change Settings



Get confidential

> Edit Profile.

This will lead you to your Profile page where you'll find a box that's tick marked to 'Display the list of people I'm following and people following me'. Uncheck the box and you no longer need to fear intrusions on your private list of friends.

Buzz now provides you an even easier way, though. On the same Settings page, you'll see a second row added in with a single button: 'Buzz'. Click on it and the very first options are the privacy ones. Select the 'Do not show these lists on my public Google profile' and

this will effectively block all public access to both – people who follow you and those you follow. Click on Save Changes for the setting to take effect.

### Buzz in your browser

There's good news for you if you're a regular user of Google Chrome and Mozilla Firefox because extensions already existed for quick access to Buzz.

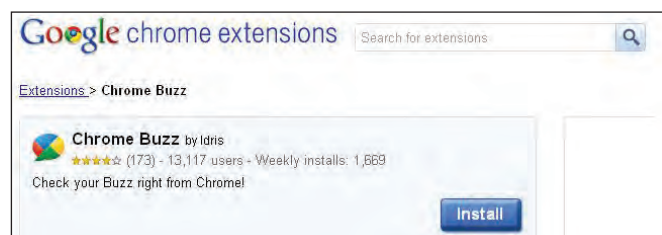
Thousands are already using Chrome Buzz for Chrome and Buzz It! for Firefox to receive updates on buzz postings even when Gmail is unopened.

To add the Chrome Buzz extension to Google Chrome, visit their extensions page (<https://chrome.google.com/extensions>) while you're using the Chrome browser, search for 'Buzz' and click on the 'Install' button that appears.

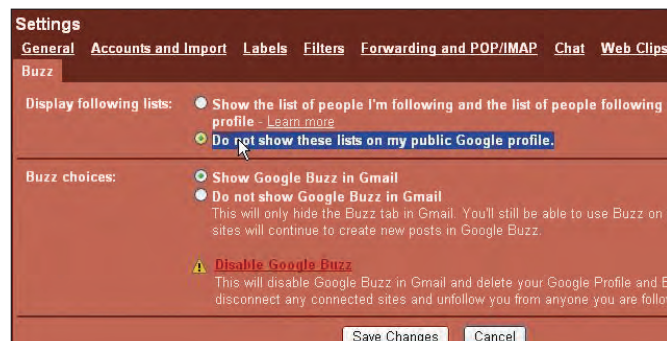
The Buzz icon will now appear on your Chrome Browser next to the address bar. Click on it, log in to your Gmail account and you can now see all your posts in a drop down menu whenever you click on the Buzz tab.

In Firefox, simply visit the Add-ons site (<https://addons.mozilla.org/en-US/firefox/>) and type Buzz It in the search tab. Buzz It! 1.0 allows you to update your Buzz account through Gmail along with the URL and the title of the current web page you're on.

In case you don't see the Buzz It! button next to your address bar on top, you'll probably find it waiting around in the Customize toolbar. Right-click on the toolbars above and click on Customize. Drag the



Installing the Buzz to Chrome is easy



Control who sees you and your friends





Buzz It! tab out and drop it to the position in which you'd like to have it in the toolbar. So now if you ever find anything interesting on a web page, simply click on the 'Buzz It!' tab and a new tab will open for you to compose your message. For your convenience, any pre-selected material will appear as the subject of your Buzz.

next to your profile photo, a tab which says 'O connected sites'. Click on it and Google will display a window with all the sites that you can link up with including Flickr, Picasa, Google Reader and – of course – Twitter. You could even add your own sites but for that you'll need to visit <http://code.google.com/apis/buzz/documentation/>.



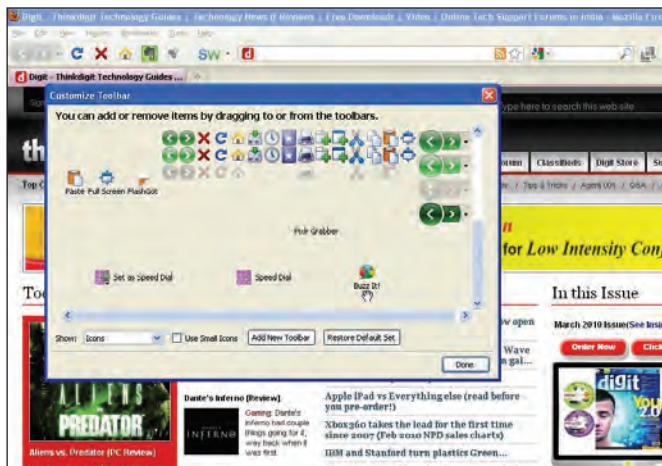
Incidentally, this is also available for Chrome

Type out your message in the subject line and click on Send. Your message will now appear as a Buzz post for all your followers with a tag line which reminds you that it was 'Sent via Buzz It!'

## Connect Twitter

Want to convert all tweets automatically to Buzz? Just click on the Buzz tab in your Gmail Account and you'll see

To link Buzz with Twitter, just click on the Twitter icon, fill in your Username and Save the changes. Please note that this will only transfer all your public Tweets to Buzz and not the other way around. Besides, it may take a while for your Twitter feeds to start getting pulled into Buzz (they're working to fix this bug right now) so don't start looking for your tweets immediately.

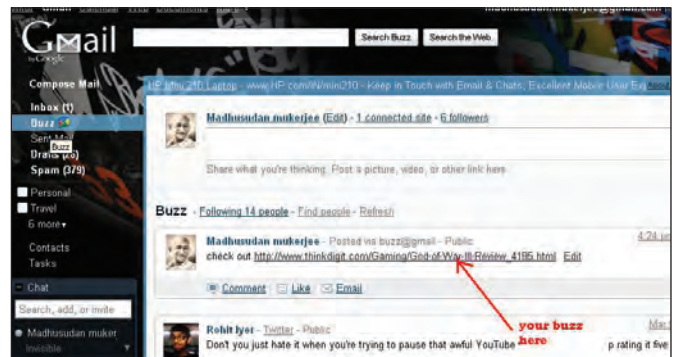


You can place the Buzz It! button where you please

## Play with Text

You can change the way your text looks to an extent in Buzz if you just add certain symbols before and after a word in your message. Adding an asterisk (\*) before and after a word makes the word bold. Putting an underscore ( \_ ) before and after posts the word as italicised. Adding a dash (-) on both

all Buzz notifications from Gmail. Click on Settings > Filters > Create a new filter once you've logged into Gmail. In the Has the words: option, type is:buzz. Click on Next Step. Google then opens a dialogue box that warns you that it's totally impossible that any mail would ever match these



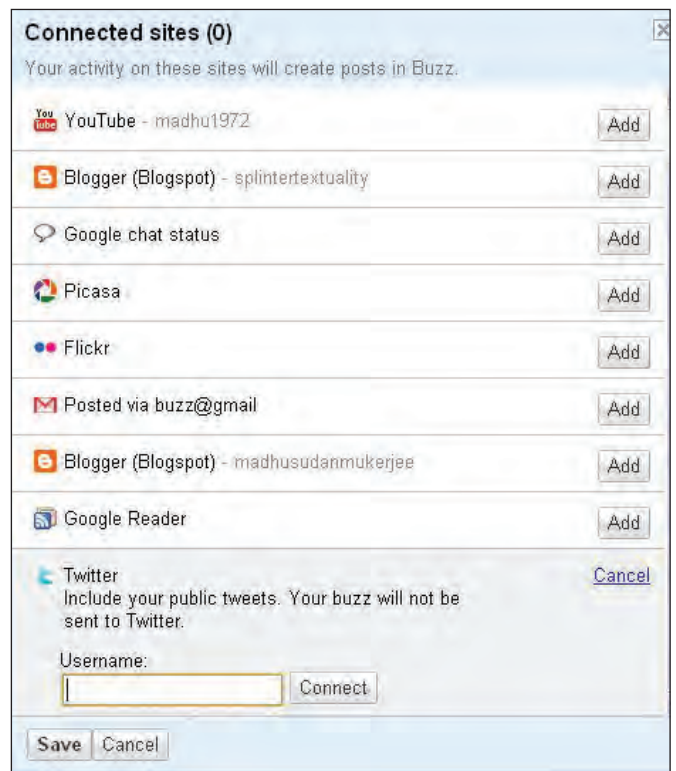
Buzz It! lets you send messages instantly through Gmail

sides of the word puts a strike-through into the word.

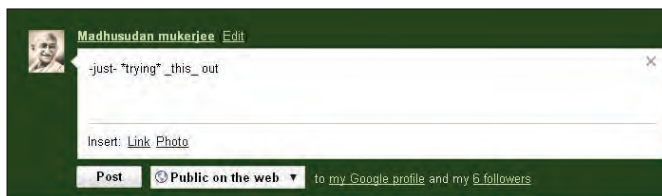
## Get Google Buzz out of your Inbox

If you're getting bugged by the Buzz it's easy to remove

words. Ignore this and click on 'OK' anyway. Opt to 'Skip the Inbox' out of the options that appear and 'Create Filter'. Now all your Buzz messages will stay out of your inbox and will only be viewable on Buzz.



Get hooked up to the sites your favourite sharing sites



Make your Buzz look different

## Opera 10.5

Fitted with a new Vector Graphics Library called Vega, a faster JavaScript engine

bookmarks.

You'll also find your old favourite Opera Unite in the list. If, however, you're a stickler



Be the first to format text in Buzz

called Carakan and an intuitive interface, the recently released Opera 10.5 claims to be the fastest browser in the world. Here's a snapshot of some of the changes and how you can use them.

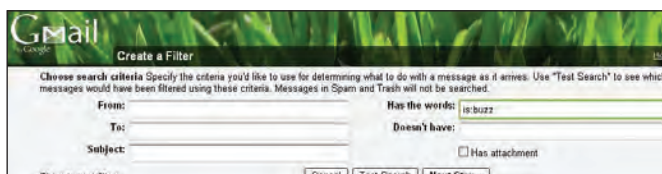
## The O button

The first surprise once you download Opera 10.5 is that the familiar menu bar is gone. By default, the menu bar is

for the old menu bar and find the square button obtrusive, you could shift back to the old style by clicking 'Show Menu Bar' in the same list. To get back to the default look, simply uncheck the same option to hide the menu bar and show the 'O' again.

## Private browsing

Opera's finally woken up to fact that every browser has



Use a filter if Buzz gets bugging

now hidden and shifted to an MS Office 2010 style button on the top left corner of the screen. Click on the 'O' in the red square and a drop down menu with all your familiar buttons – and a few more – will appear. You can use this to change the appearance, alter your preferences and manage your

a browsing option that saves no history and no cookies. However, most browsers, like Chrome's 'Incognito' for



The new Opera 10.5 has a great new UI

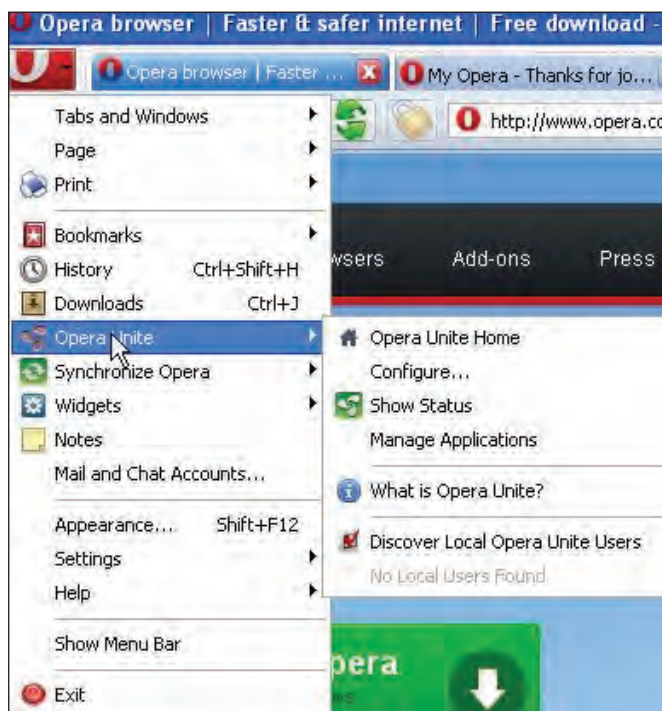
example, only allow private surfing in a separate window. Moving one step ahead, Opera 10.5 permits you to open private tabs within the window you're already using. Simply right-click on the '+' sign next to the tabs displayed on top and you'll be asked to choose whether you want to open a new tab or a new private one.

Click on the option which says 'New Private Tab' and you can do your secret surfing

access and download widgets you could also click your way through O > Widgets > Get Widgets. Download the widget you like, install and run it.

## Search with highlights

We saw it in Safari and now Opera's got it too. The new interface makes searching for text on any page a pleasure. You could click on O > Page > Find or use the usual [Ctrl]+[F]



Everything you need in one click

without leaving the current window. If you'd rather do your secretive searching in a new window, you could click on the Opera button and choose 'New Private Window' in the 'Tabs and Windows' option in the list. Alternatively, the shortcut [Ctrl] + Shift + [N] would open a new private window too.

## Independent widgets

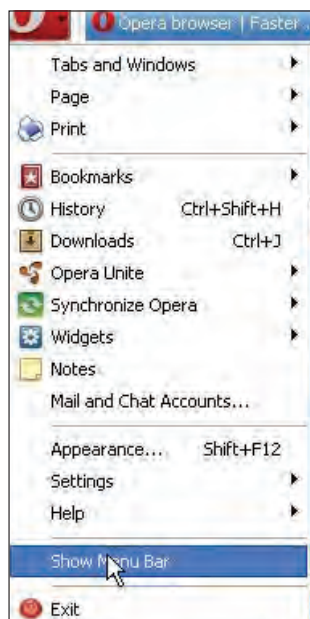
For the first time, Opera gives you easy-to-install applications that work even when Opera is not running. These desktop widgets are convenient and available in a wide variety at <http://www.opera.com/widgets/>. To

to reveal the search bar above. Type the word you're searching for. As you type, all the matching words on the page are highlighted in a bright yellow while the rest of the page pales into the background for your convenience.

## Growl for Windows

Growl is a popular free and open source notification system commonly used in Mac OS X, but now available on Windows. Growl gives updates such as friends coming online, arrival of a new email and completion of a download or torrent in a very unobtrusive way. You have

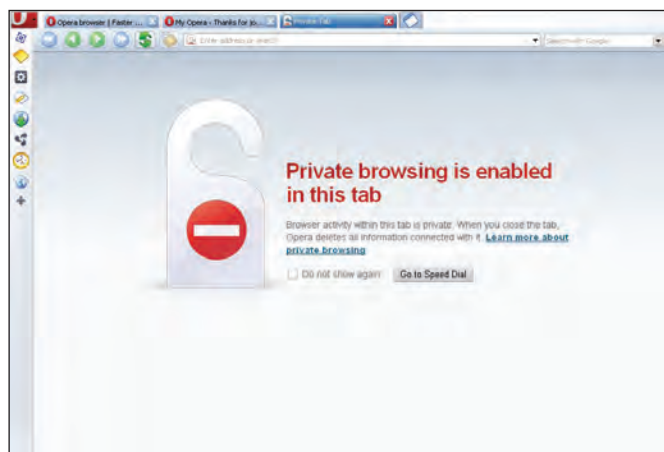




For those who prefer the old menu bar

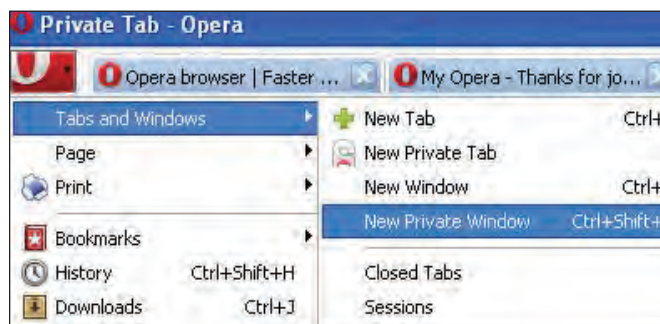


Tabs for secret surfers



For those who prefer the old menu bar

complete control over how the notification is given and what action is to be taken in response to the particular notification. One can choose to be notified by a visual indicator or by an audible sound alert or both. The user can select the type of display from the numerous display types and plugins which are provided or can be downloaded separately. Furthermore a number of additional options are available such as setting the



Data from this tab won't be saved



Independent apps through Opera

to get notifications or updates for some of the popular commonly used software on Windows such as Windows Media Player, Winamp, Microsoft Visual Studio, Microsoft Outlook, Thunderbird, Azureus, utorrent, Skype and iTunes. You can install external plug-ins and integrate them into Growl to get notifications depending on your application. You can also run scripts to get notifications from online services such as Google Reader, Wave, Gmail,

Facebook, Pidgin, Twitter and updates regarding new RSS feeds, mail, tweets and posts directly on your desktop. Numerous third-party add-ons are also available for Growl to setup notifications for your to-do list, torrents, and to monitor your system such as low disk space, USB drives, system type, inserted and removed devices.

## Viewing style and displays

By default, Growl for Windows is packed with several different displays. Custom displays can also be added. It supports third-party displays designed separately. The displays in Growl don't necessarily change only the visual display. Certain custom displays also include features such as forwarding notifications to an email address or a mobile phone through an SMS, posting on a Twitter account, launching another program, or even reading notifications out loud. A separate custom Display SDK (Software Development Kit) is available for developers to help them build their very own custom displays for Growl.

## Transfer notifications

To transfer notifications between computers, make sure the 'Allow network notifications' option is checked

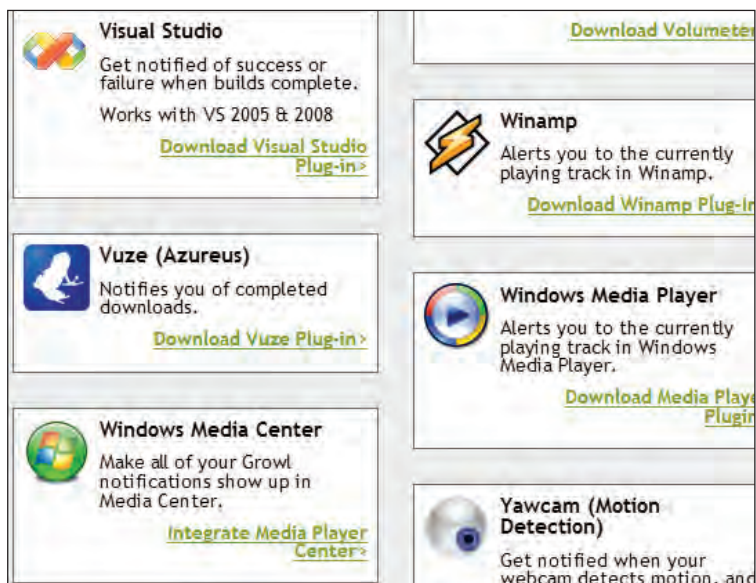
level, or importance of the notifications and if they should be forwarded to another computer or if an action such as triggering an email, running a script or launching a program should be taken.

## Using plugins

Some applications natively support Growl for Windows, but compared to Growl on Mac OS X, there aren't as many applications. However,



Idle settings determine if notifications should pop up when you are not using your computer



Plugins for most popular windows applications can be downloaded from the internet

under the Security tab. Also make sure at least one password is present in the Pass-



You can "growl" across systems

word Manager. On the primary forwarding computer, make sure 'Forward noti-



You can decide where you want to see Growl

on your network and has growl installed, it might get detected automatically, otherwise click the 'Click here to manually add a computer that is not in this list' option and enter the name or IP address of the computer you wish to forward to. Set the port value to 23053, which is the standard GNTP (Growl Notification Transport Protocol) port and chose the Format value as GNTP.

Click the Save button and the computer you selected to be forwarded to will show up as an icon in the list of computers to which the notifications can be forwarded.

To forward to a machine running Mac OS X make sure "Listen for incoming notifications" and "Allow remote application registrations" options are ticked under the Network tab on Growl installed on the Mac. On the forwarding machine enter the computer name or IP address of the computer you want to forward to and the port value should be set to 9887, which is the standard Growl network protocol's UDP port. Finally set the format value to 'UDP'. Click the Save button and the computer you selected to be forwarded to will show up as an icon in the list of computers to which the notifications can be forwarded.

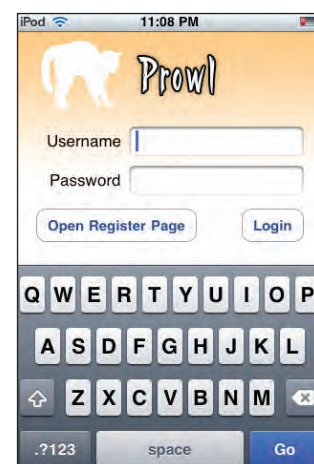
## Notification on iPhone

To get notifications directly on an iPhone, you can create an account on the Prowl web site <https://prowl.weks.net> and go to the settings page and copy your API key after generating it on the web site. On the iPhone or iPod Touch, download and

install the Prowl application from iTunes and enter your username and password used to register on the site. In Growl for Windows, under the Network tab, make sure 'Forward notifications to other computers' is checked and then under the 'Forward Notifications' dialog box select the iPhone options. Enter a name for your device and enter the Prowl API key generated previously on the web site. You can also set preferences regarding priority and idle time in the same window. Click the Save button and the device will show up in the list of devices notifications. Make sure the checkbox associated with the device in the list is ticked. If everything was setup properly, you will receive a confirmation alert on your iPhone or iPod Touch.

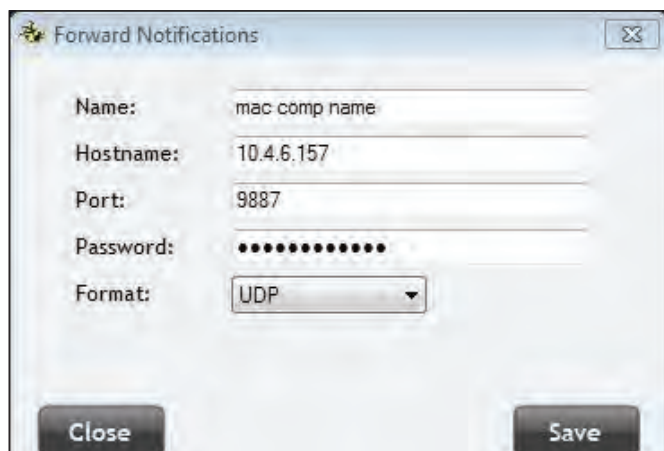
## Listary

Listary is a search and "find as you type" enhancement tool for Windows. It helps in listing, finding and providing control through lists in applications such as Windows Explorer, Task Manager and, Registry Editor, and many other programs. Normally in windows to go to a particular item you need to type the characters fast and select quickly but with the help of Listary one can select an item from the list by typing the



Use it on your iPhone as well

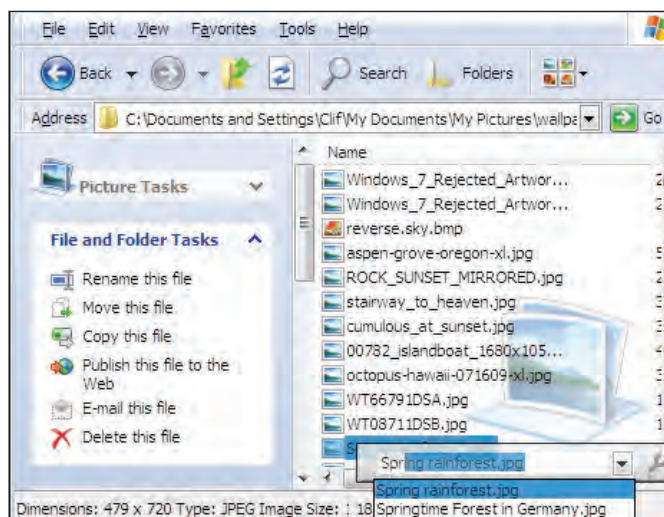




Forwarding is easy with Growl

content and can edit the input text to fix typos and doesn't need to type quickly. Besides allowing you to take longer to type your search string and the ability to edit your input, listary enhances the normal find-as-

typing /cmd and pressing [Enter] through Listary. Using the /cd PATH command in Listary the current directory can be changed to PATH in Windows Explorer or a file dialog box.



Select from the numerous features in Listary

you-type feature of Windows Explorer with wildcards, an unobtrusive popup selection list. It also has a few additional features, like hotkeys, autocomplete, and commands.

## Use commands while searching

Listary provides some small but useful commands. The command line window can be opened directly in the current open active directory while using Windows Explorer or while using a file dialog by

## Hotkeys to speed up

You don't have to search for files or items in the list by only typing the characters they start with. You can use the sequence of characters in between or search for other words in the item name. Listary employs the use of hotkeys speed up the searching and make it more powerful. Hotkeys also help in making it more convenient to select a particular item

that comes up in a list. It is very tedious and cumbersome at most times when there are too many items which forms an extremely large list with varied types of items. For example if you search ict, Listary also lists the My Pictures directory unlike normal search, where you have to go to the item by typing M and ict is part of 'Pictures'.

## Faster searching

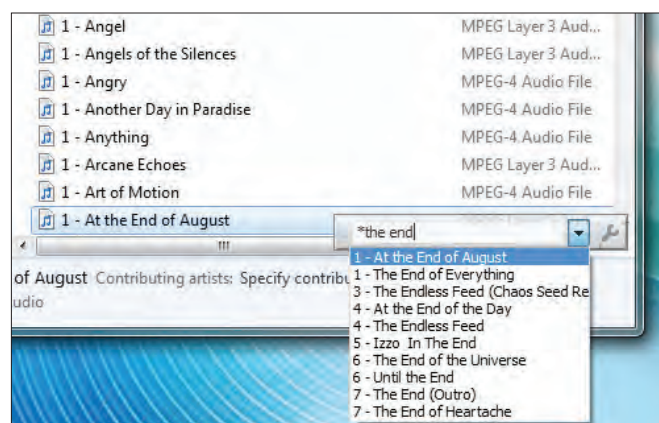
The drop down box in real time starts displaying results in the drop down list which you can sift through by pressing [Tab] or the up and down arrows as you are typing. You can also employ the autocomplete feature as soon as you start typing

files in the directory would be listed below.

For long file names, for example say that you have a folder containing some log files all named in a sequence like XYZ Log 01-XX-20.log (XX being numbers in serial), if you are looking for XYZ Log 01-05-20.log, type in [P] + [Tab] + [0] + [5] to find the file XYZ Log 01-05-20.log.

## Wildcards

Listary has in built support for the usual wildcards such as \* and ? used in Windows search, so it is easier to search and navigate through the current drop down list. The search result will be shown in the list real time, much faster



Listary's dropdown menus speedens your search

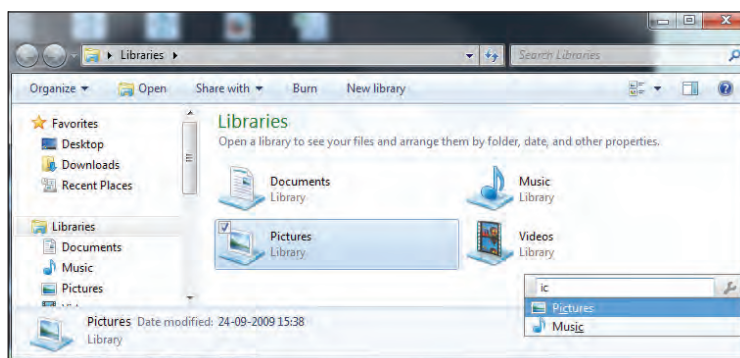
gives an autocomplete and starts formulating the list.

If you are searching for only specific file types for example only PDF files, you can start by typing only \*PDF in the window and all the PDF

than the built in search feature of Windows.

## KMPlayer

If you want to start video playback in fullscreen mode whenever a file is played, go to Pref-



You can speed up search using Hotkeys

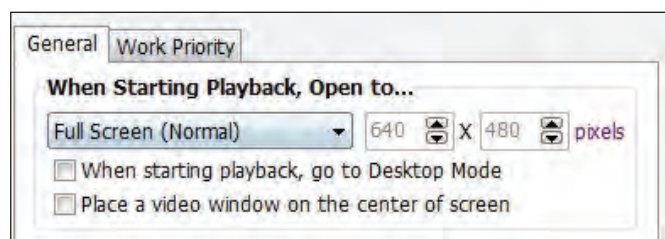
ferences [F2] and click on the General > Playback button in the left pane. In the right pane, select Full Screen (Normal) in the drop down box under When starting Playback, Open to...

In case you want to go to full screen mode whenever you start KMPlayer irrespective of whether a playback is initiated or not, go to the General section from the left pane. In the right pane, click on the When Starting... tab and select Go to Fullscreen in the dropdown labelled Screen Status:

## Improve subtitle quality

By default, the quality of subtitles depend on the resolution of the video being played. But there is a way to get high quality of subtitles that are independent of the video resolution. Open preferences by pressing [F2] and click on the Video Processing button in the left pane.

In the right pane, go to the Renderer tab and select VMR9 Renderless (HQ Quality) as video renderer.



With a few clicks, you can decide the size of your video frame

Next, click on the Subtitle Processing button in the left pane, and select "Draw to VMR/D3D Surface" in "Output Method of Subtitles" and you are done.

## Set default Window size

By default, whenever you close a file, the KMPlayer window gets restored to its default size. This can be customised by:

Resize the KMPlayer window to your liking.

Go to Preferences by pressing [F2] and click on General > Screen in the left pane. Next, go to the Advanced tab in the right-pane and uncheck Follow BG image size. Now, KMPlayer is set to whatever size you have now permanently.

## Multiple instances of KMPlayer

To run multiple videos at the same time, you need to disable the checkbox labelled Disallow multiple windows which is present in the General section of the Preferences window.

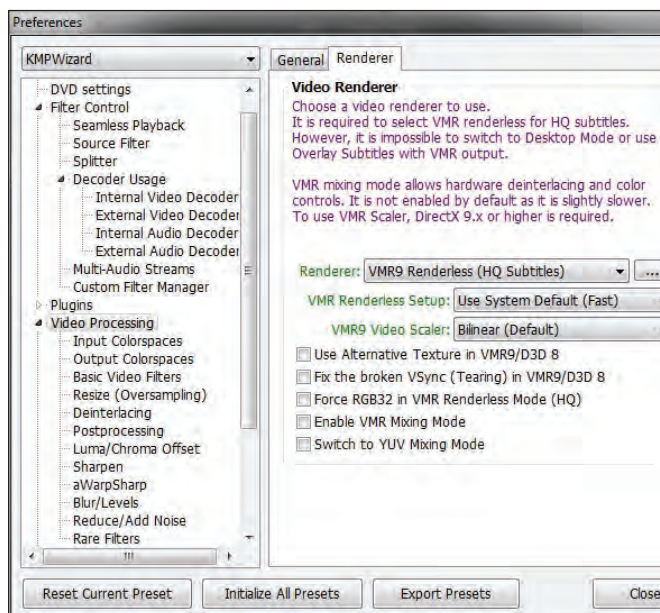
## Picture-in-Picture

Once you've enabled multiple instances of KMPlayer, you can get PIP videos in it. To achieve this,

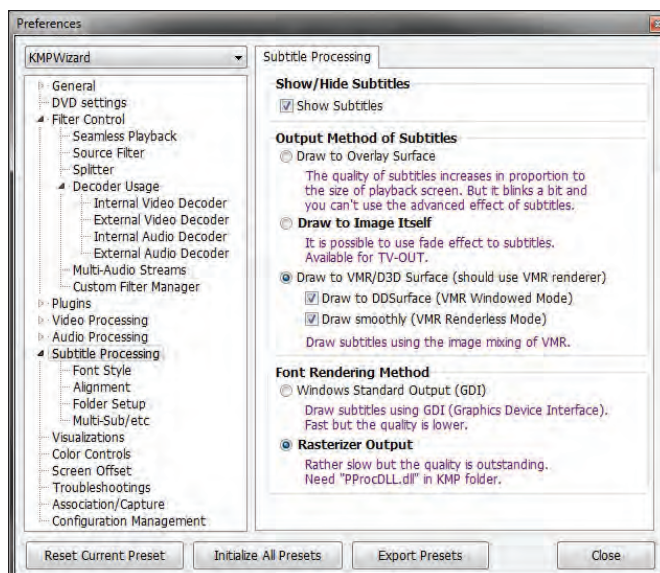
- Open the main window of the player and select Screen controls > On Top > Never from the right-click menu.
- Open the secondary window and select the

Always on top option for this one from the same place.

- To disable the window controls of the window which is "on top", go to Skins > Control Default (Autohide) in the right-click menu.
- To reduce the thickness of black borders of the "on top" windows, go to the Skins/OSC section in the Preferences window [F2].



Select your renderer and you're ready to watch video



Subtitling is easy with KMPlayer

## Adjust aspect ratio

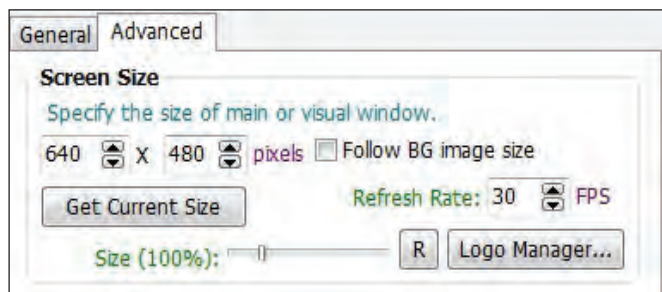
When you are viewing a video file you can easily get the best aspect ratio by hit and trial. Right-click anywhere and click on Screen Controls. Then in the context menu that comes up, you can try the different options like Auto Select Aspect Ratio and Cycle Aspect Ratio.

You can also set aspect ratio manually by clicking on keep custom Aspect Ratio, then in the Customize AR/Screen Size window you can choose the ratio.

## Custom Keyboard hotkeys

By default, KMPlayer has hotkeys associated to almost every function of the player. But, you can also customize all these hotkeys in Preferences window > General > Keys / Global Control. Next select the function in the list and press a keystroke to associate it with. If that hotkey is already in use, you will be warned and given the possibility to overwrite the hotkey function. KMPlayer will show you what function is that hotkey associated to.





You can select the default window size

You can even create different presets for different situations. Also, you can set the mouse functions in the Preferences > General > Keyboard/Mouse section. To make sure your keyboard's play/pause buttons and other media controls work inside KMPlayer even when the window is in the background, Enable global hotkeys from the Keyboard/Global Control section's Global tab.

## Correct Video Colour

If the video you are viewing appears dark or smudgy or bland, go to the Preferences window [F2] and click on Color Controls in the left pane.

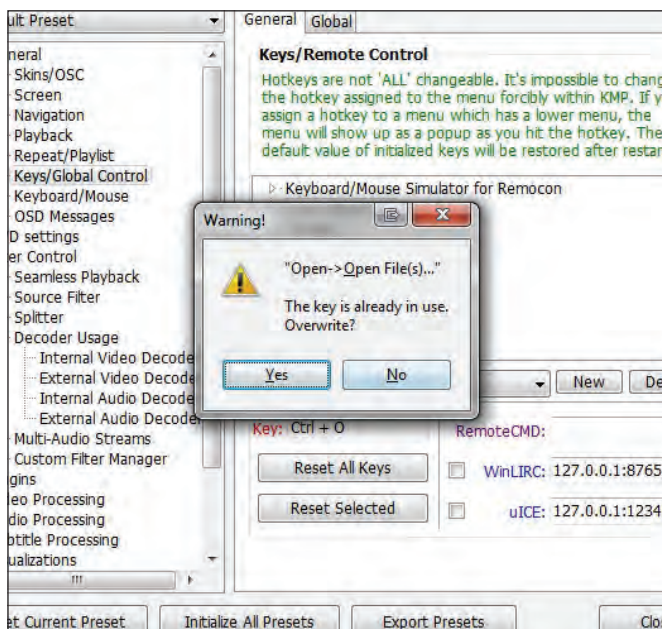
In the right pane, you can select from hardware or software colour correction tech-

niques and check the box besides Enable. Then under the corresponding model you can customise Brightness, Saturation, Contrast, Hue, Gamma, Sharpness by dragging the slice to the extent you feel satisfied and click Close to make your changes take effect.

## Stretch video feed

You can move and stretch videos on the screen with the following shortcuts:

- Turn [Num Lock] on. Use 2, 4, 6 and 8 keys on numpad to move video around.
- Press [Ctrl1] and use same keys to Stretch it.
- Del cycles video size.
- Press [5] to reset.
- You can also use + and - buttons on numpad to zoom in and out, regardless of Num Lock state.



Use custom keys to fasten your operations

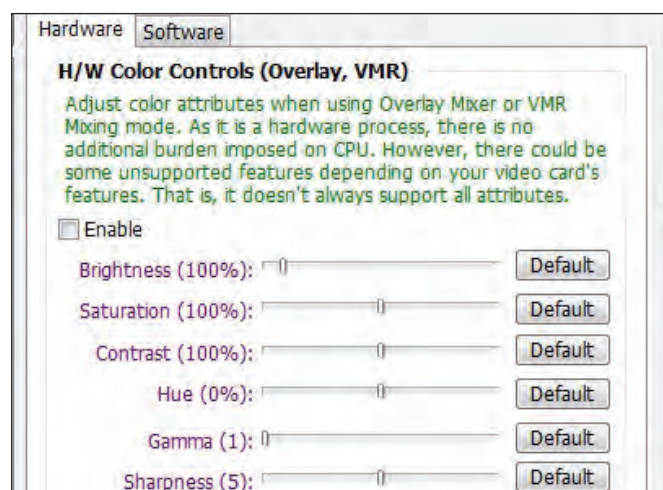
## Winamp Plugin Compatibility

The KMPlayer simulates some APIs of the older version of Winamp for making it possible to use the plugins meant for Winamp even though it is not 100 per cent compatible. The plugin structure of older Winamp was not efficient as they had to be loaded when launching the player even if they were never used. When Winamp changed this plugin structure, several compatibility issues popped up with the KMPlayer.

- Jammix
- DFX
- Audio input plugins: MAD, in\_mp3pro, in\_mpg123

Winamp supports VST and DirectX plugins by using a plugin bridge, so to use them in KMPlayer, you need to follow these steps:

- Place VST Winamp Bridge plugin (dsp\_vst.dll) into KMPlayer's plugins folder. Go to Preferences > Plugins > Audio DSP and select "VST Host DSP" to activate it. Then, load your VST plugin by clicking into "VST plugin" text box.



KMPlayer has some powerful hardware controls

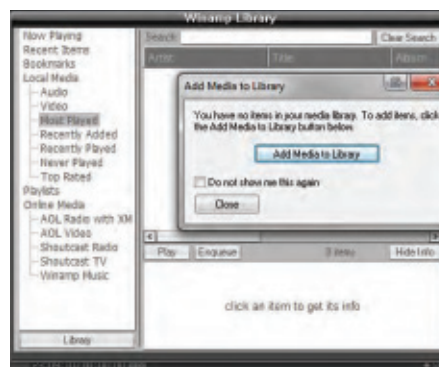
Some plugins that have been tested by the community with KMP and work perfectly are:

- DScaler libraries
- Toaster
- QuickSearch
- MiniLyrics
- MeXP
- Audioscrobbler (Last.fm)
- MilkDrop 1.04b

- If you want to use more than one VST plugin, follow the previous step and load multifxVST.dll as VST plugin. Now a window with an "Add" button appears where you can add multiple VST plugins.

## Winamp style Library

In KMPlayer, you can easily access the Winamp Media Library from Options menu by right clicking and going to Options and enabling the Advanced menu by clicking on it. Next to Options > Winamp Window > Media Library to access it.



The Winamp style library

## Troubleshooting on TDF

If you want a quick fix for a problem, register on the Thinkdigit Forum ([thinkdigit.com/forum](http://thinkdigit.com/forum)), and one of our 80,000 registered geeks, or Team Digit, might be able to help you quickly

## EOS 550D

Canon announces their new EOS 550D, 18 MP DSLR camera. We'll test it as soon as we get our hands on it. Meanwhile, you can find more digital camera reviews at [thinkdigit.com](http://thinkdigit.com)

Q&A

# Cure for computing hiccups

Want to play PlayStation games on your PC? Wondering why Windows 7 has been acting up lately? You've come to the right place...

## Random shutdown

My 7-year old PC has an ASUS A7S266 VM/u2 motherboard, an AMD Athlon 2000+ processor, 2 x 256 MB DDR RAM, WD 160GB and 500-GB Seagate hard drives for additional storage use. I use Windows XP and have an LG DVD writer. While running the system, it randomly turns off. Sometimes, it runs for an hour or some-

that, try reinstalling Klite media player.

## 32- or 64-bit?

I have just purchased a video camera, Sony Handycam WideLCD Model No. DCR-DVD808E PAL - 7.2V N50. Which operating system should I use - 32-bit or 64-bit? Which would be more compatible to use on my computer

Card (ICC) is providing 144 kbps speed all around India, if not what is the average speed? I'm planning on buying one and I would like your suggestion.

**Mrinal Roy**

The speed and quality of service depends on the ISP and particular on your location in terms of distance from the local tower and also your surroundings. Technically though, a 144kbps should give you 18kBs. Depending on traffic, speeds may vary. Use Netmeter ([www.metal-machine.de/readerror/](http://www.metal-machine.de/readerror/)) to see what speeds you're getting on the connection.

## DVD writer won't work!

I'm using a very old computer, with the following configuration:

- Intel Celeron Processor
- 40 GB hard drive
- 128 MB DDR1 RAM

I have a problem with

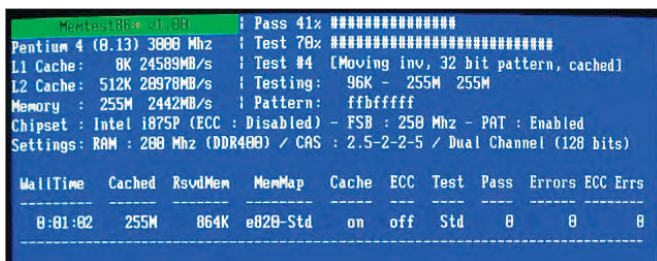
my PC, whenever I connect my CD/DVD writer to my computer, it doesn't find it. I also tried to run another CD/DVD writer to my PC, but the same problem occurred. Please help me about this problem.

**Gaurang**

Try changing the cables connecting the drive to the board. If that doesn't work, try a different connection on the board. If you haven't already done it, check the jumpers on the drive to make sure it's not set as master on the same channel as the hard drive.

## Where do I purchase Windows 7 from?

I'm a Digit subscriber for many years. I want to install licenced version of Windows 7 Professional on my PC. The price quoted by local dealer is Rs. 7,600. Please confirm whether this is a fair price or not. I also



WallTime	Cached	RsvdMem	MemMap	Cache	ECC	Test	Pass	Errors	ECC	Errs
0:01:02	255M	864K	e82b-Std	on	off	Std	0	0	0	0

Memtest thoroughly checks the memory for problems and errors

times, just 15 to 20 minutes. When I restart, the same thing happens. Because of this, I can't write a DVD, install a program or enjoy movies and music. My SMPS is in good condition. The other problem is the KLite Media Player. When I try to open the player, it shows runtime error and floating point is not loaded in Visual C++ library. Please give me a solution for both my problems.

**Dinubhuvanesh**

The problems you are facing are typical of a bad power supply. Check the temperature of the processor in the BIOS. If it's overheating, it might be causing the shutdown. Run a thorough memory test using Memtest86+ to check for memory problems. Before

while using this camera? I'd be using Sony Vegas as my editing software, since I'm much acquainted with it.

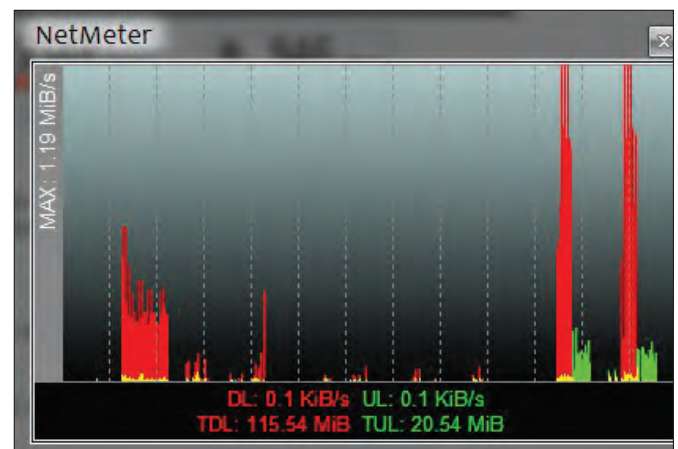
My PC's configuration is Intel Core i7 CPU, MSI X58 PRO motherboard and NVIDIA GeForce 9400 graphic card. Please help me out as I'm in urgent need of help.

**Goulian Hangshing**

It would be safer to go with a 32-bit operating system just to avoid any possible conflicts with drivers with the camera. Of course, if you have say 6 GB of RAM, I would suggest going in with a 64-bit OS to be able to use all of the memory.

## CDMA speeds

Want to know whether BSNL CDMA 1X internet connection





## Gigabyte androids

Leaked images of Gigabyte's Android phone appear on the net. We'll confirm when we know more. Watch [thinkdigit.com](http://thinkdigit.com) for news as it breaks

## Wave email updates

Google adds email notifications feature for Wave. Now you're told immediately about updates to the Waves you follow

want the addresses and contact numbers of the dealers at Vadodara and Ahmedabad from where I can purchase a genuine copy of Windows 7. Kindly let me know the price of the same at Mumbai and address of the dealer and phone number. Also please inform me about the precautions to be taken to get genuine version.

**Edison Christian**


 Visit Microsoft's site for more details and pricing information: <http://www.microsoft.com/india/originalsoftware/business/retailStore1.aspx>. You'll find shops in your city as well. You can also buy the package online if you wish. The stated price of Rs. 7,600 sounds very good. Just make sure the copy you get is authentic.

## DVD drive problems

My system configuration is given below

- Intel 945GCPE motherboard
- Intel Pentium 4 processor
- 2 GB RAM
- 160 GB hard disc

My DVD drive is not opening. I have to press it a hundred times to open! I'm using jumper settings with the DVD drive.

 The problem is with the drive itself and not because of the jumper settings. Disable the jumpers, and disconnect the PATA cable and try ejecting the drive. If it doesn't work, take the drive to your vendor if it's under warranty for replacement or repair.

## Windows error

I have the following configuration:


- Intel Core 2 Quad Q8400

2.66 GHz

- Intel DG41TY
- 2 x 2 Kingston DDR2 800 MHz
- Seagate 1 TB SATA 7200 rpm
- Samsung 22-inch 2233SW
- Sony SATA 24x DVD Writer
- iBall Enticer ATX Cabinet

Whenever I start my computer, the following error appears. I have Windows 7 Ultimate installed. How can I fix this?


**Abhi Aravind**

 The error message is caused due to some problem with the .NET framework. Do a thorough disk scan to make sure data on the hard drive is not corrupted. Try installing the latest version of .NET framework on your system.

## Unable to download Firefox

I can't install Mozilla Firefox 3.6 on my PC. It's a Compaq Presario CQ40 laptop. Its system configuration is an Intel Pentium Dual CPU T3000 @2.00GHz, 1.96 GB of RAM and it runs on Windows XP Professional Service Pack 2 as the operating system. After 30 per cent of Firefox downloads from the internet, it shows an error. Also tell me which browser is the best one for me.

**Subhojit Mallik**

 Try downloading Firefox from one of the other mirrors. Try one from this list - [www.mozilla.org/community/mirrors.html](http://www.mozilla.org/community/mirrors.html). Use a download manager such as Free Download Manager. If you want to try other browsers, be sure to try out Opera ([www.opera.com](http://www.opera.com)) and Google Chrome ([www.google.com/chrome](http://www.google.com/chrome)).

## Removing Windows

I having three operating systems installed on my PC - Windows XP SP2, Vista Ultimate

```
Microsoft Windows [Version 6.0.6000]
Copyright (c) 2006 Microsoft Corporation. All rights reserved

K:\Sources>Bootrec.exe /fixMBR
The operation completed successfully.


K:\Sources>Bootrec.exe /fixBoot
The operation completed successfully.

K:\Sources>
```

Repairing the Windows boot loader and settings using the Recovery Console

SP2, Windows 7 Enterprise in three separate partitions. Windows XP on C:, Vista on D:, Windows 7 on E:. I want to remove windows 7 and Windows XP from my drive. I don't know how to do it.

**Shubham Gupta**

 Removing Windows operating systems is easy. Boot from Windows Vista and format the partitions. Backup any data you might have on those partitions. The bootloader and its settings might get corrupted depending on which partition it is installed. Keep the Vista installation disc ready as you might need to restore the bootloader by booting into the recovery console.

## Memory gone missing


My system configuration is as follows

- Processor: Intel Pentium 4 2.80 GHz
- RAM: 1GB DDR 2
- Motherboard: Socket LGA775
- Foxconn G31MX
- Hard Disk Drive: 250 GB
- Optical Disk Drive: Samsung CD ROM
- Monitor: LG Flatron EZ 15-inch CRT running at 1024x768
- Windows XP Professional SP2 with Avast Home edition.

My problem is that Windows system properties show only 0.99 GB of system memory instead of 1 GB. Your browser may not support display of this image. But tune up system information shows 1014 MB of system memory as

shown in the figure attached below. Your browser may not support display of this image. Is this because of onboard memory using part of system memory as graphics memory? If yes, will a graphics card solve the problem?


**Bijesh Amatya**

 The amount of memory shown is a roundup figure. Also, 1024MB makes 1GB. The memory consumption by default is very minimal (32 to 128MB). Freeing up that memory will not speed up the system by a lot. If you're looking for a graphics card for some gaming, I wouldn't suggest spending more than Rs. 2,000 on it. Also, invest in another gigabyte of RAM. An overall system upgrade is recommended for more intense gaming.

## Opening up to Open Office

I want to know if it's possible to open a document made in OpenOffice on a PC having Microsoft Office.

**Samundra Ghimerey**

 OpenOffice will open MS Office files without a problem. The latest version 3.2 can even open Office 2007 files without the need for plug-ins.

## Go with another G31 board?

I have an Asrock G31M-VS and I decided to change the motherboard with another one, as it contains only one PCI slot

## 2010 - Year of broadband

MTNL and BSNL double speeds on several existing broadband schemes. Visit thinkdigit.com/forum and let us know if you've witnessed this speed increase

## Palm loses money

Palm shares take a 25 per cent drop after news of last quarter results. Stock market gurus say, "Sell!"

Q&A

and two SATA ports. A dealer is giving me a motherboard; he said it's an HCL G31. I checked the board. It has four SATA ports and two PCI slots. What do you think is better - mine or the one he's giving me?

**Manu Dhiman**

I hope you're changing the motherboard because it's malfunctioning. A switch from one G31-based motherboard to another can bring no benefits. I would suggest looking at other options based on the Intel's G41 and G43 chipsets.

### PlayStation on PC?

I love playing games on PS2, PlayStation 3, Xbox 360, but I play all these game at a video game parlour. I wanted to play all these game formats on my laptop. Which graphics card can I choose so that I can play

optimised and it won't run all the games. For the PS3 and Xbox360, there has been little development. Laptops cannot be upgraded with graphics cards.

### NTLDR missing

I get an error message on startup - "NTLDR is missing. Press [Ctrl]+[Alt]+[Del] to restart". Before I started getting this message, I had deleted some hidden files from the D partition on which the operating system was installed. I did this to remove some virus files. What is NTLDR? Now I am unable to start Windows also.

**Ashok Gole**

The file you deleted - NTLDR, was part of Windows boot loader which helps boot into the Windows operating system. To fix this, you need to boot into the installation disc and log into the Recovery

I run it in Windows Vista, it doesn't load with the pre-defined sound settings after Winamp restarts. Everything goes back to default. How to make those settings remain alive after Winamp is closed?

Also, I get an error message "Error: cannot access registry information" each time i open Winamp application.

**pro from Thinkdigit forum**

Try running Winamp in XP compatibility mode.

**nims11 from Thinkdigit forum**

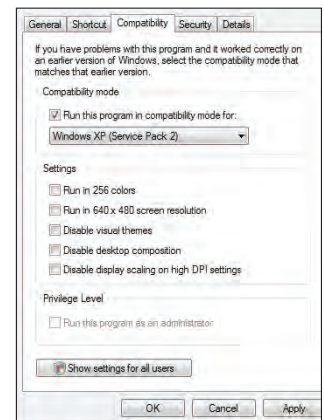
### Windows 7 randomly shuts down

I was using the Windows 7 evaluation copy for the last a month or so, but last week, it showed that it was going to lock itself and I needed to register the OS. That got me worried, and after that, Internet Explorer and some other applications started getting stuck.

Four days back, I installed the same Windows 7 because I like it. I am still facing a few problems with it. I put some links to download with my download manager, but as I go away from the machine, the computer goes into sleep mode and my internet connection stops working. The other issue is, while working on, sometimes, it automatically get to shut down. How can I retrieve my work?

**Mobileman from Thinkdigit forum**

You've been using the Windows 7 RC that expired on March 01, 2010. You'll have to purchase a new copy of Windows, and reinstall it once again for it to work. The shutdowns are forced on all Windows 7 RC installations. It does this every two hours or so.



Running programs in compatibility mode can fix errors

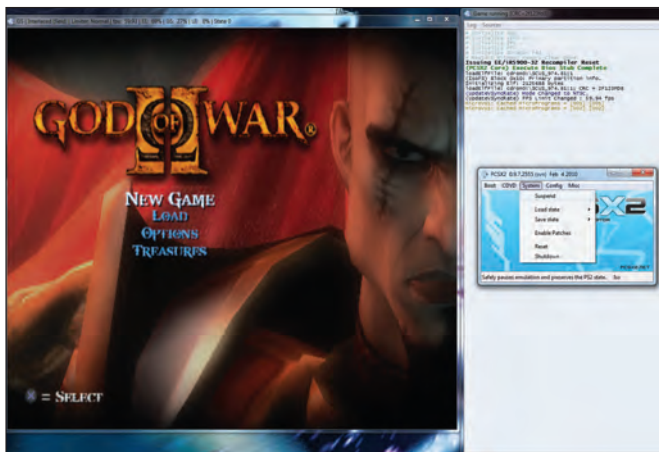
The problem with the internet connection turning off is when you try and switch users. Go to the Power Options and disable the sleep function for Windows. If you are using a PPPoE connection for your internet connection, make sure that the password for the account is saved for all users. Otherwise, switching users or logging off will disconnect the internet connection as well.

### System fit for Windows 7?

I am an avid reader of digit. My configuration is an Intel Core 2 Duo 2.8 GHz, Giga-byte S series motherboard, Samsung 160GB SATA drive, Umax 1GB Ram, 18.5-inch AOC LCD monitor, Microsoft keyboard and mouse. Please tell me whether my system configuration is sufficient for Windows 7 or I need to upgrade any parts.

**Sangeeta Chakravorty**

Your system is fine for Windows 7. We recommend using it on 2 GB of RAM. We've seen Windows 7 running just about okay on 512MB of RAM though.



PCSX2, a Playstation 2 emulator running the title God of War

console games on my laptop? My laptop consist of 2 GB RAM, 160 GB hard disk and a 1.71 GHz processor.

**Mohit Tiwari**

Very few console emulators are available for the PCs. The most stable one available is for the PlayStation 2. It's called PCSX2 (www.pcsx2.net). It's not

Console. Once there, use the FIXBOOT and FIXMBR commands to repair the boot loader.

### Winamp plugin in Vista

I am facing problems with the Winamp Enhancer plugin. I am a big fan of Enhancer for Windows. It works fine with Windows XP but when





## FIRST LOOK

After you read this, go to [thinkdigit.com/d/corei7\\_980X](http://thinkdigit.com/d/corei7_980X) for more information on this spanking new CPU

# Intel i7 980 Extreme

The first of its kind

In this day and age of dual and quad cores, hex core is not a phrase you'd have heard much. That's because this is the first 6-core desktop solution out there. Behold, Intel's latest brainchild — the 980 Extreme — 6 cores with hyperthreading, running at 3.33 GHz, and based on a shiny new 32nm fabrication process. We received a review sample that shipped with a huge, (by Intel standards), heat-pipe-based cooling solution that has a pretty neat retention mechanism along with a backplate — something that we've not seen on stock cooling solutions. Even though this chip is 32nm, it isn't necessarily cooler than the Core i7 975 Extreme,

owing to the extra cores that nullify the thermal advantage a fab shrink would theoretically bring about. We noticed temperatures crossed 55 degrees Celsius on load, something that didn't happen on the 975 Extreme. CPU-Z shows the L2 cache to be 1.5 MB which is strange since the quad-core Core i7 features a 2 MB cache. The L3 cache is 12 MB i.e. 2 MB per core, unchanged from the earlier Nehalems.

That aside, the benchmarks speak for themselves and the 980 Extreme is a fire breather in terms of performance, winning benchmark competitions with ease. Applications that do not properly utilise more than four cores will not see a per-

formance gain, heavily multi-threaded applications will benefit. Most games, for example, will not see an increase in fps, but future titles might, given that parallelism is the new playfield for performance. 3D Mark Vantage kept crashing on our 980 Extreme, so that was the only benchmark that we didn't use. Wprime 2.0 is a whole 1.892 seconds faster and took 5.381 seconds to complete.



Intel's bundled heatsink — mean!

The Core i7 975 Extreme, the previous fastest CPU managed 7.273 seconds. Our rendering test saw Maya 8.0 take just 20 seconds, a whole nine

seconds faster. DivX Encoder 7 took around the same time to complete — no change, but Handbrake that is optimised for more than four cores took 82.3 seconds as opposed to 104.1 seconds to encode a 100 MB .VOB file to .MP4, so the extra two cores are making a sizeable difference.

We feel *Tales of Valor* responds to clock speeds and is taking advantage of Turbo Mode on the Core i7 975 Extreme. Things are promising if you look at Crysis Warhead — the performance delta is huge — 57 fps more, meaning the game is making full use of the extra cores — a trend that will only continue. The pricing for this monster of a CPU is still not known, since it's not officially available here, but we expect it to be around the Rs. 50,000 mark — which is more than entire gaming rigs. That being said, if you are interested in having a shot at setting benchmarking records, this is the CPU for you.

## Specifications

Core speed: 3.33 GHz, L1 cache: 384 KB, L2 cache: 1536 KB L3 cache: 12 MB, Platform: LGA 1366, Number of Cores: 6 with Hyperthreading

## Contact

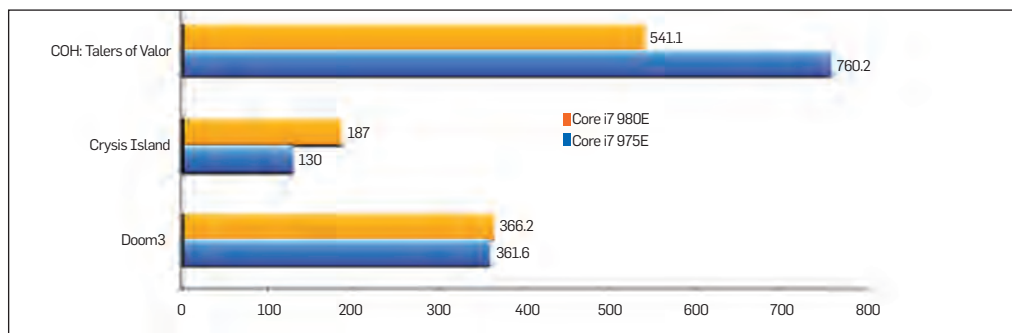
**Intel Corp**

**Phone:** 1-800-425 4999

**Email:** [apacsupport@mailbox.intel.com](mailto:apacsupport@mailbox.intel.com)

**Web site:** [www.intel.com/in](http://www.intel.com/in)

**Price:** Rs. 50,000 (approx)



7.5/10

**Features..... 8.5**  
**Performance ..... 9**  
**Value ..... 5.5**

## Apples and Googles

The relationship between these two is more strained than ever, with Apple threatening to sue Google if any more Android phones support multi-touch

## Samsung phones

Keep in touch with up-to-the-minute information on all Samsung phone news on Thinkdigit. Visit: <http://bit.ly/9brwMa>

Bazaar

# CorbyPRO B5310

Cute, connected, cool

**T**he Samsung Corby Pro screams out youth, vibrance and chic style. The phone comes with a whole bunch of widgets and apps for connecting to social networks and web services such as Flickr and Facebook. It has a 2.8-inch display that performs decently for a resistive touch-screen. However be prepared to encounter several mistaps and unintended application launches in normal usage. The highlight of the phone is the slide out QWERTY keypad. We found it to be quite good, with adequately bevelled keys that provide just the right amount of tactile feedback. The 3.15 megapixel camera produces sharp pictures in normal lighting conditions and that's it. As for build quality, despite being almost entirely plastic, the



phone gives the impression of being sturdy — even the slide out keypad. There are several enhancements in this phone

things considered it's a 'cute' bundle of features and until QWERTY Android devices breach this price point, we'd

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over predecessors in the Corby series, namely Wi-Fi, 3.5G connectivity, and in built GPS. All

say go for it if Touch is a must and QWERTY is what you were always looking for.

## Specifications

Display: 2.8-inch touch-screen TFT, 240 x 320 pixels, 16M colours  
Network: GSM / EDGE / GPRS  
850/900/1800/1900 MHz  
Memory: 100MB, microSD up to 16 GB  
Weight: 135 gms  
Connectivity: Wi-Fi, Micro USB, Bluetooth v2.1, 3.5 mm audio

## Contact

**Vikas Tagra**

**Phone:** +91-124-488 1234

**Email:** [vikas.tagra@samsung.com](mailto:vikas.tagra@samsung.com)

**Web site:** [www.samsung.co.in](http://www.samsung.co.in)

**Price:** Rs. 13,900

7/10

**Features..... 7.5**  
**Performance ..... 6.5**  
**Build Quality ..... 7**  
**Value for money..... 6.5**

## Specifications

CPU: Intel Atom N270,  
RAM: 1 GB DDR2 667  
MHz, HDD: 2.5", 160 GB,  
5400 rpm, Display: 10.1-  
inches, 1024 x 600 pixels

## Contact

**Dell India Pvt Ltd**

**Phone:** +1-800-425-4026

**Web site:** [www.dell.co.in](http://www.dell.co.in)

**Price:** Rs. 17,400

8/10

**Features..... 7.5**  
**Performance ..... 7.5**  
**Build Quality ..... 8.5**  
**Value for money..... 8.5**

# Dell Inspiron Mini 10

Tiny Inspirer

**T**he Mini 10 is a solid little thing, with a very good glossy black finish. Build quality is top class. The hinge mechanism is really sturdy. The keypad is one of the best we've come across on a netbook. Where most keypads are cramped for room, Dell wastes no space with a keypad bezel and provides really large keys, with great feedback. Beveling is barely noticeable, but the keys are large enough to negate this effect. Typing is, as a result, much easier thereby

addressing our number one grouse with netbooks. The display is decent enough, although colour and contrast take the proverbial toss. The trackpad is responsive enough although we don't agree with integrating the mouse keys into it.

The Mini 10 performs at par with other netbooks based on similar configurations. It come pre-loaded with Windows XP, so the memory is sufficient for



most tasks. We got a 6-cell battery, and this stretches battery life to over four hours in our test — not bad. It's 3G ready, with a SIM slot. Priced at Rs. 17,400 the Mini 10 makes a very good buy for anyone looking for a solid netbook.

Don't buy a laptop without visiting [consumermate.com](http://consumermate.com). Prices, hot deals, Test Center reviews and more available



**Xeon 6-core CPUs roll out**

Intel takes their 32nm advantage to the server arena releasing the Xeon 5600 series, based on the 6-core Westmere architecture

**Kingston ups the bar**

Kingston has just released new HyperX DDR3 modules rated at 2400 MHz although market availability is still a bit away

# Sony Ericsson Satio

## Great camera, but poor touch response

**S**atio is one of the rare full screen touch phones from SE. This is a bulky handset, but a good looker. The phone runs on an ARM Cortex-A8 600 MHz and the Symbian S60 OS. It has a resistive touchscreen, which is not very responsive. The user interface is a bit altered from typical Symbian style — there are five home screens on the Satio. It supports WiFi and comes with an in-built menu called Locations which has all the GPS functionality.

The on-screen QWERTY keypad is quite good thanks to the haptic feedback and large keys which reduces typos.

The speaker quality of the phone is very ordinary. The built in earphones give a decent output. The sluggish response kills the internet experience.



The USP of the phone is its camera. Dual flash technology gives good results in low light conditions. Video shooting at 30 fps allows live zooming option. The accelerometer of the phone changes the orientation of images accordingly.

At Rs. 36,950, this phone is overpriced, considering it uses a resistive touch (not good for internet usage), but it does sport a very good camera.

For comprehensive buying information, test centre reviews, prices, hot deals, user reviews and much more about cell phones, go to [consumer.mate.com](http://consumer.mate.com)

**Specifications**

GSM 850/900/1800/1900, UMTS 850/1900/2100, Data Link: CSD, HSCSD, GPRS, EDGE, UMTS, HSDPA, HSUPA, OS: Symbian S60 5th edition, Processor: ARM Cortex A8

**Contact**

**Sony Ericsson Mobile Communication India**  
**Phone:** 1-800-111800 (MTNL/BSNL); 39011111 (others)  
**Web site:** [www.sonyericsson.com](http://www.sonyericsson.com)  
**Price:** 36,950

6.5/10

**Features.....8**  
**Performance ..... 7.5**  
**Build quality.....7**  
**Value for money.....4**

**Specifications**

LCD touchscreen, 5x thermal diodes, 5x fan control, display backlight controllable

**Contact**

**Prime ABGB**

**Phone:** +91-22-6740 2000

**Email:**

[sales@primeabgb.com](mailto:sales@primeabgb.com)

**Web site:**

[www.primeabgb.com](http://www.primeabgb.com)

**Price:** Rs 2,000

7/10

**Features..... 7.5**  
**Performance ..... 7.5**  
**Build quality.....7**  
**Value for money.....6**

# NZXT Sentry 2

## Easy system monitoring meets flashy bling

**T**his is a temperature gauge and fan controller rolled into one. It has a nice colourful LCD display that is touch controlled. The unit draws power from a 4-pin molex connector. The Sentry 2 has 3-pin connects for up to five fans and it also includes thermal diodes for temperature monitoring. The sensor is really thin, allowing it to be placed between CPUs and heatsinks, (for example), without upsetting the contact.

Once connected you can monitor the fan speed of any



five fans and the temperature of any five zones. There are two modes of controlling fans — auto (based on set thresholds) and manual. Alarms can be set to go off if a monitored fan is faulty, or if the thermal threshold has been exceeded in a particular zone and the Sentry

2s backlight can be turned off at night, to prevent annoying glare. The touch interface is not the best around, but it gets the job done. Priced at Rs. 2,000, the Sentry 2 is a nice addition to a powerful gaming rig. It's flashy and functional — not for non-showoffs though.

## New OpenGL specifications released

Khronos Group released specifications for OpenGL versions 3.3 and 4.0 at the Game Developers Conference in San Francisco

## PS3 motion controller

Sony's Playstation Move is a motion controller that consists of a handheld remote and an eye camera to spot motion. Visit <http://bit.ly/cslBk4> for more information

Bazaar

# Novatron NTD38

## HD playback for cheap

Last month, we reviewed the Xstreamer. This month, we have the Novatron NTD38. There are stark difference between the two. For one, the body of the Novatron NTD38 feels cheap and is made of plastic. Unlike the Xstreamer, the NTD38 is a bulkier product which means it can accommodate a 3.5-inch hard drive. It has a small screen at the front which is only useful if you sit a very close to it.

Startup takes a few seconds but the interface is slow. Menus are boring and it's not particularly a fun product to use. Playback of media is simple and straight-forward, but it wasn't without the glitches.

We experienced a couple of lockups which required restarts in some cases. Accessing Windows shares over the network also didn't work even after enabling up Guest accounts to free up any security restrictions on the LAN. There's also support for FTP. Wi-Fi comes as part of the feature set. There is support for all common formats but it doesn't come to matching the complete feature set of the Xstreamer. There's no fancy video and photo streaming from the internet either.

HD media players are more than just video playback devices these days, so a lot is expected. The Nova-



tron NTD is strictly satisfactorily in this regard. The only consolation is its price of Rs. 3,750. It's the cheapest HD player you'll find and is a good buy if you're looking for just HD playback with a few extra features. Anything better and you'll have to be willing to spend twice as much.

## Specifications

2-inch screen, eSATA, Ethernet, WiFi support  
Formats: H264, WMVHD, MKV, AVI, MP3, WMA, AC3, DTS, etc.

## Contact

Prime ABGB

Phone: +91-22-6740 2000

Email: [sales@primeabgb.com](mailto:sales@primeabgb.com)

Web site: [www.primeabgb.com](http://www.primeabgb.com)

Price: Rs. 3,750

6.5/10

Features.....6  
Performance.....6  
Build quality.....6  
Value for money.....7.5

# Zebtronics Audiophile 5000

## Audio-snap!

## Specifications

40 mm drivers, 32 Ohms impedance, 20 - 20,000Hz frequency range, 3.5 mm connectors

## Contact

Top Notch Info-  
tronix India Pvt Ltd

Phone: +91-44-4393 6000

Email: [enquiry@zebrtronics.info](mailto:enquiry@zebrtronics.info)

Web site: [www.zebrtronics.net](http://www.zebrtronics.net)

Price: Rs. 650

5.5/10

Features.....7  
Performance.....6  
Build quality.....3  
Value for money.....5

The Zebtronics Audiophile 5000 is a very basic pair of headphones aimed at the very basic computer gamer.

The build quality is pretty appalling. The height adjustment sliders for the phones on the sides for example are extremely loose and the band on the top very weak. There is a volume control also has a microphone muting button. Cable quality is average.

The earpads aren't very comfortable and they don't completely cover the ears. The drivers extrude a little bit and touch the ear on the inside. The fit of the headphones isn't great either.

Audio quality, is however, decent for the price. It has a decent amount of detail in the sound for music although it isn't particularly great at reproducing highs or lows. The sound signature isn't very coloured. The built-in microphone is a good thing to have while multiplayer games online.

The quality of the mic is good although not crisp.

At just Rs. 650, it's very cheap, but also very mediocre in terms of performance and build.





**Cisco's new bandwidth glut**

Cisco has just released their high-speed 322 Tbps routing system that should be able to power and incredible online future

**Lockheed Martin beefs up security**

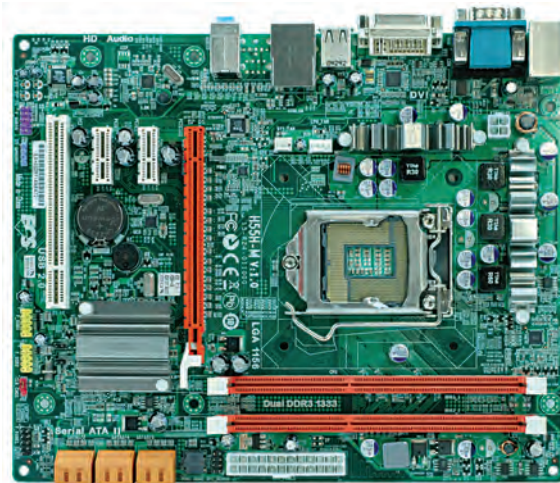
The top contractor for the US government plans to find new ways to predict and prevent wide-scale cyber attacks, and secure classified information

# ECS A890GXM-A

## Back in Black?

**B**ased on the 890GX Northbridge along with the SB850 Southbridge, this is AMD's shiny new offering with support for upcoming 6-core CPUs. The layout of the motherboard is very neat and with an attractive heatsink. The PCIe slot is thoughtfully a good distance away from the PCI slot. The BIOS is a little basic, and we expected more overclocking options and features.

In addition to two PCIe x1 slots, one PCI slot the motherboard has 2 PCIe x16 slots for graphics interface. The board comes with a CrossfireX support to link graphics solutions.



Sadly there is no support for USB 3.0 on this motherboard. The board has five SATA 3.0 ports which are capable of a 6Gb/s data transfer speed. There is a CMOS reset button between the HDMI and eSATA

port columns. Both DVI and VGA video output connections are present.

At Rs. 7,500 this motherboard is decently priced, although the Gigabyte GA-890GPA-UD3H might make more sense, given the mere Rs. 1,000 difference in price.

### Specifications

AM3 Socket, Chipset : AMD 890GX, graphics : HD4290, 14 USB2.0 ports, 5 SATA 3.0 ports, Power supply : EPS 12V, Audio : Realtek ALC892

### Contact

**Rashi Peripherals Pvt. Ltd**

**Phone:** +91-22-6709

0828 (BSNL); +91-22-

3901 1111 (others)

**Email:**

response@rptechindia.com

**Web site:**

www.rptechindia.com

**Price:** Rs. 7,500



For a detailed review, go to [http://thinkdigit.com/d/ecs\\_a890gx/m/](http://thinkdigit.com/d/ecs_a890gx/m/)

### Specifications

CPU Support AMD AM3

PhenomII/ AthlonII CPU

CPU Socket AMD Socket AM3

FSB 5200MT/s (HT3.0)

### Contact

**Gigabyte Technology Co.**

**Ltd.**

**Phone:** +91-22-4063 3206

**Email:**

viveks@gigabyte.in

**Web site:**

www.gigabyte.com.tw

# Gigabyte GA-890GPA-UD3H

## A new breed

**G**A890GPA-UD3H is based on the new 890GX platform from AMD. The PCB is blue colored. At first glance the quality is evident — heatsinks, MOSFETs, capacitors, chokes — everything seems premium-grade. The design of the northbridge and southbridge heatsinks has a larger surface area. The BIOS is pretty rich and typical of Gigabyte with a lot of settings and overclocking options to play with.

This board has support for USB3.0 thanks to the NEC



Read more on the 890GPA at [http://thinkdigit.com/d/ga\\_890ud3h/](http://thinkdigit.com/d/ga_890ud3h/)

USB 3.0 controller chip which is located just behind the ports

On the other side of the board we have six SATA 3.0 ports, along with two SATA 2.0 ports which is supported by the SATA 2 chipset.

The processor cooler leaves very little gap to insert a memory stick in the RAM slots.

The price point of Rs. 8,500 is on the higher side, but then, if this were an Intel X58-based motherboard, it'd probably be priced at Rs.

17,000. It has a good feature set, will support the upcoming 6-core CPUs and is thus quite future proof. A good option for AMD builds.



7/10

**Features.....7**  
**Performance.....7**  
**Build quality.....7.5**  
**Value for money.....6.5**



### Targus presenter remote

Targus has launched its multimedia presentation remote the AMP09AP, available all over the country



### OCZ Onyx

OCZ's new entry-level SSD is called Onyx and is expected to debut for under \$100

Bazaar

# Zion 4 GB DDR3

## High-density modules sure ain't cheap!

**Z**ion is a little known brand, though DDR3 requires no introduction being quite the rage, with Intel already having moved all their platforms to DDR3. AMD is following suit with their latest platforms as well. One of the benefits of DDR3 among others, is the capacity for higher density memory modules. And that's where this kit comes in. While enthusiasts will talk about 2000 MHz, tri-channel kits, people interested in setting up workstations requiring extra memory need high capacity DIMMs. With 4 GB on a single DIMM, this module is something different. It's for those looking for lots of RAM, in the

region of 8 GB or more though admittedly such configurations have limited usage.

The rated frequency is 1333 MHz, at timings of 9-9-9-24. These specifications are surely not enthusiast-grade, for those kits run at 1600 MHz at tighter timings of 7-7-7-21. The memory chips which are by Hynix, a value-oriented OEM. We couldn't boot into tighter timings than 9-8-8-24 with the default voltages and we didn't try any voltage tweaking. In our performance



tests we found the memory bandwidth score according to ScienceMark 2 was 9597.38 MB per second, pretty much at par with most 1333 MHz DDR3 memory. Admittedly higher density modules are rare and users even rarer, but we were pretty disappointed to find the price to be as high as Rs. 10,200. We would have loved it to be around Rs. 6,000 — this is just too high a price to pay. For around 8,000 bucks you can buy a fast dual channel kit.

### Specifications

DIMM size: 4 GB, Clock: 1333 MHz, Timings: 9-9-9-24 @ 1333 MHz

### Contact

**Abacus Peripherals**

**Phone:** +91-98901 89321

**Email:** vipul@abacus-peripherals.com

**Web site:** www.zionram.com

**Price:** Rs. 10,200



Features.....	6
Performance .....	6.5
Build quality.....	5.5
Value for money.....	3.5

# ASUS EN GT240

## A cool customer

### Specifications

GPU: GeForce GT240,  
Stream processors: 96,  
Memory: 1 GB, GDDR3,  
GPU clock: 550 MHz,  
memory clock: 1580 MHz

### Contact

**Rashi Peripherals Pvt. Ltd.**

**Phone:** +91-22-6709 0828

**Email:** response@  
rptechindia.com

**Web site:** www.rptechindia.com

**Price:** Rs. 7,890



Features.....	6.5
Performance .....	7
Build quality.....	6
Value for money.....	5

**W**hat's to cheer about a series that is little more than a fabrication change? Well, it's true that NVIDIA is guilty of prepping their new 40nm process with cheaper GPUs before Fermi gets built. The GT240 is in fact, more powerful than the 9600 GT in terms of number of shader units with 96 SPs and it's between the 9600 GT (64 SPs) and the 9800 GT (112 SPs). The 9600 GT wasn't exactly a furnace, but with a fabrication shrink, the GT 240 is even better.

The EN GT240 is simple looking with a heatsink on the GPU, the memory doesn't need (or get) active cooling. The card runs really cool even on load, and we never saw temperatures cross 50 degrees — most impressive.



3D Mark Vantage saw 4213 marks. Unfortunately this card will not run *Crysis* with eye-candy turned up and we got an average fps of just 10, at 1280 x 1024 pixels. *Clear Sky* also murders this card and expectedly so, with a score of 11.6 fps at the same resolution. However, if you're willing to trade-off visual detail, you will get decent fps for most games you play.

An MRP of Rs. 7,890 is a little steep, but street prices are bound to be lower. Otherwise, it's a solid choice.



## MS battles Adobe

The battle between Silverlight and Flash for dominance is on amid other potential threats like Sun JavaFX

## OS X gets Steam

Finally on the 8th of March, Valve officially announced Steam and Source Engine for Apple's OS X. read the full story at <http://bit.ly/9s7azX>

# Sparkle GTX 285 2 GB

### Double the VRAM double the fun?

The fact that it's based on a high-end GPU means it won't be cheap. And it's not DX11-ready. Against such odds Sparkle thought it prudent to double the VRAM — 2 GB of GDDR3 memory; though the clock speed on the VRAM stays the same — 2.25 GHz. The card has a white heatsink shroud, the plastic of which looks cheaper than the de facto shroud. The heatsink is stock, but we did notice the temperature being around three degrees higher than other GTX 285s we've tested.

We noticed the VRAM playing an ever-so-slight role in boosting fps at higher settings. *Crysis Warhead* for example, showed a drop of just 1 fps when going from a resolution



of 1680 x 1050 to 1920 x 1200 — on other GTX 285s this difference is definitely more pronounced. *Clear Sky* also gives similar scores to *Crysis* — both these games are taxing, and the GTX 285 manages a barely acceptable 26 fps and 23 fps respectively. In *Far Cry 2* we see the GTX 285 barely breaking a sweat and managing 52 fps at a

resolution of 1920 x 1200 with all effects set to maximum. 3D Mark Vantage sees an overall score 14482 — still impressive for a GPU that is nearly two years old. Priced at Rs. 26,000, the Sparkle GTX 285 is nonetheless a retired soldier, and a Radeon HD 5870 will cost the same and perform around 20 per cent better.

## Specifications

GPU: GeForce GTX 285,  
Stream Processors: 240,  
memory: 2 GB, GDDR3,  
Core clock: 648 MHz,  
Memory clock: 2250 MHz

## Contact

**Abacus Peripherals Pvt. Ltd**

**Phone:** +91-22-4091 4603

**Email:** [enquiry@abacusperipherals.com](mailto:enquiry@abacusperipherals.com)

**Web site:**

[www.abacusperipherals.com](http://www.abacusperipherals.com)

**Price:** 26,000

5.5/10

Features.....7  
Performance ..... 6.5  
Build quality.....6  
Value for money..... 3.5

## Specifications

Chipset: Intel P55, Socket 1156, 2x PCIe x16 slots, 2x PCI slots, 1x PCIe x1 slot, 1x PCIe x4 slot, No of SATA ports: 6, No of USB ports: 7

## Contact

**Rashi Peripherals Pvt. Ltd.**

**Phone:** +91-22-6709 0828

**Email:**

[response@rptechindia.com](mailto:response@rptechindia.com)

**Web site:**

[www.rptechindia.com](http://www.rptechindia.com)

**Price:** Rs. 9,900

6/10

Features.....6  
Performance ..... 6.5  
Build quality.....6  
Value for money..... 6

# ECS P55H-A Black

### Lynnfield gets a (not!) cheap(er) partner!

Adoption of Lynnfield is slow. We blame prices, everyone was immediately interested in outdoing each other and launching better boards, very few offered something good for value-based buyers. This board is well laid out, featuring all solid-state caps. The build quality is mediocre, but the heatsinks with copper inserts that look like a dragons silhouette are pretty neat. The BIOS has cursory overclocking options — there is a manual

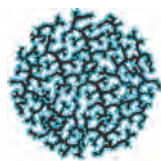


mode, but we weren't able to boot when we set our memory timings to 9-9-9-24 @ 1600 MHz, for memory rated at 2000 MHz. Performance was a sore point. Peculiarly, the

scores were all over the place. The WinRAR score of 3745 was the lowest we've seen on this platform, the Cinebench R10 score was also at par with the lower rung of P55 boards. Scores were neck and neck with the ASUS P7P55D Deluxe at most times, below at certain times. Stability was not an option, but we'd like a better heatsink on the chipset that gets hot under load. Priced at Rs. 9,900, the MSI P55-GD65 is a better bet, with a slightly better build and set of components at a lower price.

## Smartphone market update

MS and Palm plunge in light of the Android threat, even as RIM and Apple hold on tenaciously to their position



## Anode power

Anode, a battery design using nanocomposite materials delivers 10 times the capacity of conventional battery designs

Bazaar

# Buffalo WHR-HP-G300N

Not quite the beast we expected

The G300N is a nice looking router with a slim body and two rather large, complex looking antennae rising out the top. Overall, the device is compact, build quality is top notch, and the G300N can be stood on a table or wall mounted. It's a Draft N router, and Buffalo provides their AOSS security button that enables WEP encryption — a fancy name for a feature similar to other routers. There is no power button, but a small switch on the rear allows you to select between router and access point modes. Buffalo's interface is pretty good,



though not as intuitive as, say, Linksys' router interface.

In terms of transfer rates, we got a score of 2.81 MBps

in zone 1, and this decreased to 1.23 MBps in zone 2 and 0.68 MBps in zone 3 — pretty mediocre all round and it's noteworthy to see how performance drops alarmingly with attenuation that occurs in zone 3. HD video streaming was possible in zone 1, but not recommended in the other two zones. Similarly in PassMark 3s Performance Test, the initially promising score of 35.4 MBps in zone 1 fell to a measly 10.1 mbps in zone 3. At Rs. 6,000, the G300N is priced at par with its competition, but isn't as good as some of the routers out there in terms of performance.

## Specifications

Draft N (802.11n), Speed: 300 mbps max, 4 x RJ45 LAN ports, 1 x WAN port (RJ45)

## Contact

**Buffalo Inc.**

**Phone:** +91-11-4153 8059

**Email:** b-milinda@

melcoinc.co.jp

**Web site:** www.

buffalo-asia.com

**Price:** Rs. 6,000

5/10

Features.....6  
Performance ..... 6.5  
Build quality..... 5.5  
Value for money..... 3.5

# Lian Li A71F

Perfect... almost...

## Specifications

Full tower ATX, all aluminium, Fans: 140mm x 2, 120mm x 2, tool-less HDD and expansion card installation

## Contact

**XTREME GRAFIX**

**Phone:** +91-99875 39043

**Email:** sudhirsmani@gmail.com

**Web site:** http://xtremegfx.com/

**Price:** Rs. 15,650

7/10

Features.....7.5  
Performance .....8  
Build quality.....6.5  
Value for money.....6

An all aluminium construction and the outer body design is based on simplistic, straight lines. It has an imposing look due to its size, but it's remarkably light. The brushed metal look is not aggressively evident, but it's downright elegant. The front door is pretty thick. The side panels fit flush, but there is room for some movement after using them a bit. The motherboard tray is not removable but a cutout coincides with the CPU region — very convenient for people with CPU coolers that have a backplate. It's deep enough to take the longest graphics cards with at least three inches of room between the end of the card and the HDD bay area. HDDs are installed side-

ways by screwing rubber grommets on to the drive and sliding these into the outward facing bays. The expansion slots are also tool-less and have a very solid all metal design. The power supply can be bottom or top mounted, though it's set up for a bottom-mounted design. On to cooling — two 140 mm fans located on the front suck in air from the venting on the bottom through the HDD trays and inside the system. One complaint is this airflow is not strong enough to penetrate much further than the HDD bays, therefore it doesn't cool anything more



than the HDDs, although it will cause cool air to mill inside the case. There is a rear mounted 120mm fan that sucks out hot air from the CPU region. Cable management is very good. The A71F feels very roomy. At Rs. 15,650, it's good, but not perfect, which, given the price, one would expect it to be.





Photography: Jiten Gandhi

# Price no bar

**The entry level cellphone market is all set to explode with loads of new brands and extensive feature lists at never seen before prices. We help you choose from 30 options.**

Nimish Sawant  
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Ten million mobile phone subscribers are added to the Indian cellphone market every month. A major chunk of this number is thanks to the no-frills entry level handsets, which are great for making and receiving calls and SMS. The

importance of cellphones in our lives cannot be underestimated.

Increased competition among the handset manufacturers has resulted in entry-level cellphones getting features that were only seen in high-end phones just a year back. Some phones have additional features like camera, FM etc. We got our hands on close to 30 entry-level cell

phones from a range of manufacturers. Sony Ericsson did not wish to participate in this comparison test, a disturbing trend we've noticed since last year. LG displayed a marked lack of interest in sending us phones, but eventually managed to get a couple of devices at the last moment, one of which is featured briefly here. Since our last entry-level cell-

phones comparison test, we came across a lot of trends.

The rise of multi SIM phones for one. Due to the increasing use of cellphones at workplace and home, it has become the need of the hour to have two separate numbers for the work and personal use. Till some months back you had to keep switching your SIM cards or use two different phones. But thanks to dual-SIM enabled phones, that problem has been addressed.

The definition of entry-level cell phones has undergone a wealth of changes. All the phones that we got for the comparison test had colour displays, except one. Monochrome displays are slowly but surely dying out. The phones we got also had camera



## Google Maps v4.1 on Android

Google Maps version 4.1 for Android phones has Latitude widget and live wallpaper facility

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Entry level cell phones

and rudimentary music play-back. Some phones even had a full QWERTY keypad while others could play videos. All these features on an entry-level phone were unthinkable just a couple of years back. Being the personal devices that they are, we feel such additions are necessary, after all, who doesn't like a converged device? And why should one pay the earth for one?

### No frills (no thrills?) (Up to Rs 2,500)

We had the most basic phones in this category. We laid more stress on calling functionality and messaging rather than on features like camera and audio in this segment.

#### Features

A lot of interesting phones were identified in this category and it also threw in a lot of firsts for us. For instance we got this full QWERTY Olive V-G8000 which were surprised to find in this category. It is a single SIM phone without a camera with a wide 2.2-inch screen. The keypad has isolated buttons which seem a bit tiny and will get used to

for someone moving from a regular keypad to a QWERTY one.

The other phone from Olive, the V-G2300 had another surprise element which we felt will be seen in many entry-level phones in the future. It has support for AAA batteries, as an alternate source of power. It has a well designed rubberised keypad and supports FM and has a speaker phone functionality.

ZTE G-S202 was a phone which anyone can mistake for a calculator thanks to its large number pad. This is one of the few phones which have a larger space dedicated to the keypad than the screen. It was the only monochrome phone that we

got and supports only calling, messaging and FM. The backlit display is wonderful and an LED torch is located on top.

Nokia's 1209 and 1662 were also present in this category. Of the two we felt that 1662 has a poorly designed keypad with stiff buttons. 1209 on the other hand had a smaller screen but a comparatively better designed keypad. Intex IN2020E was

the only camera phone in this segment. As far as build quality goes IN2020E and g-Fone 345 left a lot to be desired.

Videocon V1305, g-Fone 351N, g-Fone 345 and Intex IN2020E also support dual SIM functionality which was another interesting aspect.

#### Performance

We concentrated on the call strength and call quality more than any other feature. All the phones performed well in the Zone 1 test, but that wasn't the case in Zone 2. The call on g-Fone 345 was dropped after a couple of seconds whereas Olive V-G2300 and ZTE GS202 gave a poor quality call quality in Zone 2. The speaker quality on 345 and 351N was quite good as compared to the other phones. Camera quality of the Intex IN2020E was poor.

### A step up: basics plus some more (Rs. 2,501 to Rs. 4,200)

This category comprised dual SIM cellphones. It had phones that had slightly more features than phones in the previous

category. Obviously, at this price range people are going to expect better multimedia capabilities.

#### Features

In this category we identified nine phones. Intex IN 4477 and Olive V-G200 were two phones that stood out in this segment whereas we were surprised to find a full QWERTY keypad enabled fly B430. IN4477 is the best in terms of looks thanks to its strong all metal body. The rear flap has a brush metal finish whereas the keypad has a glossy metallic finish. Olive VG200 on the other hand has a wide 2.2-inch screen which also has touchscreen functionality. Fly B430 has a nicely designed keypad, but its rear flap tends to bend in certain parts. It also has a 1.3MP camera.

Videocon's dual sim phones in this category V1306, V1402 and V1405 have a variety as far as the design element is concerned. While V1306 is very ordinary to look at, V1402 and V1405 have interesting keypad design. The navigation pad on V1405 is poorly designed though. The rear flaps on all



Intex IN 2020E



g-Fone 345

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## Buzz on Android

Google has launched the Buzz widget for Android mobile phone users



## Energy Clock

Tendrill Vision is a device which connects to the grid to give you a real time information about your energy use and cost

three phones are of poor quality as they tend to bend when you open the phone. In V1405, the battery slot is somewhat constricted which makes it difficult to detach the battery if you want to replace it.

Intex IN4420 has an extendable antenna which allows FM Radio to be played without the need for earphones. Intex IN4410 has a rear flap which can only be opened with the help of some sharp object, which is very annoying. Its keypad is quite good as compared to that of IN4420 but not as good as IN4477.

g-Fone 565 has a very compartmentalised design. The numberpad, navigation pad and the four buttons surrounding it are isolated from each other. It also has a speaker on the rear side which is quite loud.

All phones in this category have multimedia features like an audio player, FM Radio and video player. Only Videocon 'V1306 has no video option. The user interface of all the phones is somewhat similar as is the underlying operating system.

## Performance

Intex IN4477 had the best call strength and quality in both the test zones. g-Fone 565 and

Intex IN4410 gave a poor call quality in zone 2. The rest of the phones in this category performed almost the same in both the zones. None of the calls were dropped in zone two despite it being in the basement where there is a high chance of that happening.

Intex IN4420 and fly B430 had a great Bluetooth data transfer speed of 128 Kbps whereas the Videocon V1405 gave a measly 17 Kbps. The other two ie. V1306 and V1402 did not have Bluetooth. IN4477 gave a speed of 50Kbps which was next best.



Fly B430

The camera quality and video output of IN4477 was quite poor. g-Fone had good image quality. On the whole, the camera and video playback in this segment was not really great. Many phones like V1405, V1402 have a very slow refresh rate for video recording which results in poor quality halting videos. The Fly B430 has the best speaker in this segment.

Olive V-G200 has a massive 2,000 mAh battery which gives a whopping 12 hours of talktime according to the manufacturer. But its touch response leaves a lot to be desired.

## HOW WE TESTED

We got around 30 cellphones to test. Since this is an entry level cellphone test, we kept the upper limit price at Rs.8,000. Based on the pricing we divided the test into four categories..

Cellphones are instruments that are feature-based and when a purchase is being made, you only have enough time to have a quick run through of its features. Apart from cellphones being a communication tool, its also an accessory. Keeping this in mind, we gave equal weightage to the features of the cellphone like its form factor, ergonomics, keypad, user interface, additional tools like camera, speakers, FM among other things. Dual SIM capability was judged as a feature since 18 phones had that facility.

For testing the voice quality, we identified two Zones namely Zone 1 and Zone 2. In Zone 1 the signal

strength and voice quality were studied for a call that was made from same floor. Whereas for Zone 2 we took the cellphone in our building's basement where there are high chances of call-dropping. The cellphones inbuilt receiver and speaker quality were checked in Zone 1.

The camera quality was judged after clicking an indoor and an outdoor photograph. The same was done with the video. Image and video quality were kept at the highest resolution supported by that camera phone. Other settings like AWB, Effects and Exposure were kept at default for all the phones. The photographs were transferred from the microSD card to a PC and checked for crispness and colour clarity. Videos that were recorded were played on media player classic to check for their quality.

## More for less (Rs. 4,201 to Rs. 6,000)

This category had around eight phones. Here we looked at phones which had additional features like better cameras and audio/video.

## Features

This segment had a lot of variety in terms of form factor, keypads and interface. ZTE GN281 and Fly E106 were the two full touchscreen phones. E106 has an excellent design along with a 2.0 MP camera. It comes with a stylus and has dedicated buttons on the side for locking the phone and camera shutter. ZTE GN281 at 2.8 inches had the largest screen and it comes in a radical baby-pink colour that made it stand out.

Samsung B2100 had the best build amongst all the phones that we tested. It has been advertised as a waterproof phone that can work even



Samsung B2100

didn't test this however). We did pour some water on the rear side and on opening the flap, found the battery to be absolutely dry. The phone has an rubberised body which gives a very good grip.

G-fone 588 has a full QWERTY keypad with a good overall build. It comes with a 1.3 MP camera and has nicely raised buttons which allow fast typing. Videocon V1602 has some good features like isolated keys and a nice wide screen.

Nokia 2700 is aesthetically very pleasing. With a black plastic curved rear end and a front end with a glossy finish

Nokia 2700 has a simple design. The phone has as many as five languages to choose from namely English, Hindi, Marathi and Gujarati. Apart from the regular menus, it has two additional menus called Life Tools and Maps. Nokia 3110 on the other hand has a smaller 1.3MP camera, but it has a good audio player along with FM Radio facility. The

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Fly	0120 4141640	flycare@meridiantelecom.in	www.flyphone.in
G-Fone	1800 209 5625	info@gfone.com	http://g-fone.in
Olive	+91-124-4648000	india@olive.me	www.olive.me
Videocon	1800 1025 111	support@videoconmobiles.com	www.videoconmobiles.com
LG	NA	NA	http://www.in.lge.com
ZTE	+91 9619475588	059328@zte.com.cn	http://www.zte.com.cn/en/
Nokia	NA	NA	http://www.nokia.co.in

## Bus route app

Three persons from Mumbai have come out with a Java based bus route app for BEST buses in Mumbai

## Visual search on iPhone

Omoby is a visual search app which allows you to snap a picture of any object and get a list of search results

## Entry level cell phones



Nokia 3110

keypad of Nokia 3110 is very good and unlike the Nokia 2700, you do not have to apply pressure to get a response from the keys.

Intex IN5030 was a phone with support for three SIMs which included one CDMA card and two GSM cards. This was the only phone with this facility. It comes with an extra battery. While the GSM phone is in use the CDMA SIM can remain active and vice versa.

### Performance

The call quality in Zone 2 was very poor for the Intex IN5030 and the Fly E106 as both dropped calls. ZTE GN281 also had poor call quality as the

voice kept breaking throughout the call. The touch response on both GN281 and E106 was very sluggish. The stylus of the E106 does not help much either.

Nokia phones are the best when it comes to data transfer via Bluetooth with each giving over 130kbps transfer speed. E106 could not transfer the test file on Bluetooth as it could not connect to the destination device. IN5030 had the slowest data transfer speed as under 30kbps.

### The priciest minnows (Rs. 6,001 and above)

This category comprised the higher end of the price cutoffs that we had decided on. These phones are expected to have excellent bang for buck, providing good call quality as well as a host of rich multimedia features. This is also where the big brands start to play.

### Features

We had three phones in this category namely Samsung Metro S5200, Samsung C5130 and fly MC160. While the Samsung handsets are slider

phones, the fly MC106 is a dual-SIM touch screen enabled phone. With 16-million colours, the S5200 has the maximum colours amongst all the phones that we tested. It also has a 3.2MP camera which is located on the top portion of the rear side of the slider. On the other hand the C5130 has its 1.3MP camera located on the rear side of the fixed portion of the phone. Between the two,

the S5200 is much slimmer than C5130. The blended metallic red and black colour give the S5200 a very classy appearance as opposed to the black and dark grey colour of the C5130. A hot swappable memory card slot is only present on the S5200 amongst all the three phones in this category. Fly MC106 is a bar phone with a regular keypad which also has touch functionality. It has an excellently



Fly MC160

designed keypad which allows fast messaging. MC106 has a large 2.4-inch screen. The rear side of the phone has the 3.0 MP camera without a flash. The rear flap looks very attractive with the rubberised finish which gives a good grip. For dual SIM phones, the placement of the SIM card slot is crucial. Fly MC160 has got that aspect all

wrong. It has SIM card slots which are placed very uncomfortably just behind the battery slot making SIM insertion and retrieval a real pain.

### Performance

The camera quality of the S5200 was the best amongst the three that we tested. Presence of an LED-flash enables the S5200 to be used in low light conditions, thus giving it an edge. The keypad feedback on all three phones was very good, with the Fly MC106 giving a better feedback. But the touch-screen functionality on MC106 is a huge letdown as the touch response is very poor. S5200 has a great data transfer speed of around 138Kbps whereas



Samsung Metro S5200

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## Entry level cell phones

CATEGORIES	UPTO Rs. 2,500								
Brand Model	Nokia 1209	g-Fone 345	Nokia 1662	Olive V-G2300	Videocon V1305	g-Fone 351N	ZTE G S202	Olive V-G8000	
Plus (+)	Good Keypad	Great loudspeaker	Decent earpiece volume	AAA battery	Good loudspeaker	Higher battery rating	Strong build	QWERTY keypad	
Plus (-)	No FM	Poor build quality	Bad keypad	Poor build quality	Poor build quality	Poor keypad	Limited menus	No Bluetooth	
Price (Rs)	1619	1649	1999	1999	2095	2199	2299	2299	
									
Grand Totals (Out of 100)	25.85	38.38	33.30	29.93	41.13	42.62	25.90	39.40	
Features (Out Of 50)	11.4	17.4	15.1	13.8	20.2	23.05	13.8	21.2	
Performance (Out Of 50)	14.45	20.98	18.20	16.13	20.93	19.57	12.10	18.20	
<b>Physical Specs</b>									
Form Factor	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	
2G Network Bands	GSM 850/900/1800/1900	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900 / 1800	GSM 900/1800	
Screen Resolution (Pixels)	96 x 98	96 x 96	128 x 160	128 x 128	96 x 96	NA	96 x 64	176 x 220	
Screen Size (Inches)	1.4	1.4	1.8	1.5	1.4	1.8	NA	2.2	
Maximum Screen colours	65k	65K	65k	65K	65K	NA	65K	NA	
Touchscreen / Dual Screen (Y/N)	N	N	N	N	N	N	N	N	
Battery Rating	700mAh	800mAh	860mAh	600mAh	820mAh	1800mAh	NA	1500mAh	
Dimensions (H x W x L) in mm	102 x 44.1 x 17.5	98 x 40 x 13	108 x 45 x 13.75	103x44x18	100 x 43 x 13	103 x 44 x 16	108 x 49.5 x 15.1	106x61x15	
Expandable Memory Type	N	microSD upto 2GB	NA	NA	NA	microSD upto 2GB	NA	NA	
Hot Swappable	N	N	N	N	N	N	NA	N	
Available Handset Colours	2	1	2	1	1	1	1	2	
Dual SIM (Y/N)	N	Y	N	N	Y	Y	N	N	
LED Torch (Y/N)	Y	Y	Y	N	Y	Y	Y	N	
<b>Other Features</b>									
Operating System	Symbian	Java	Symbian	Java	Java	Java	NA	Java	
Charging via USB (Y/N)	N	N	N	N	Y	Y	N	Y	
Hardware Keypad (Regular/QWERTY)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	QWERTY	
Address Book Capacity	200	200	500	200	1000	800	100	100	
No of calls in register	60 (20M,20R,20D)	NA	60 (20M,20R,20D)	NA	NA	NA	45 (15R,15D,15M)	NA	
Talk Time / Standby Time *	7 / 365	NA	4 / 475	3 / 100	NA	NA	NA	10 / 400	
No of Profiles # / Customisable	6	5	6	5	5	6	2	4	
Offline Operability (Y/N)	Y	Y	Y	N	Y	Y	N	Y	
<b>Connectivity</b>									
Browsing (GPRS/HSCSD/EDGE/3G)	NA	NA	N	NA	NA	GPRS	N	NA	
Connectivity (WiFi/Bluetooth/IR/USB)	NA	NA	N	NA	NA	Bluetooth	N	N	
<b>Accessories</b>									
Bundled Accessories	charger, battery	charger, battery, headset	charger, battery, headphone,	charger, battery, 1 AAA battery, headset	charger, battery, headset	charger, battery, headset	charger, battery	charger, battery, earphones	
Size of memory card provided	NA	NA	NA	NA	NA	NA	NA	NA	
<b>Build Quality</b>									
Overall (So 10)	5	3	6	4	5	5.5	6	7	
Overall Ergonomics (So 10)	6	4.5	6	5	6	5.5	7	7.5	
Keypad Design (So 10)	4.5	5	4.5	6.5	6.5	6.5	7.5	6.6	
<b>Camera Specs</b>									
Camera Resolution (Mega Pixels)	NA	NA	NA	NA	NA	NA	NA	NA	
Video Capture Resolution	NA	NA	NA	NA	NA	NA	NA	NA	
Dual Cameras / Auto Focus / Flash (Y/N)	NA	NA	NA	NA	NA	NA	NA	NA	
Mirror for self portrait (Y / N)	NA	NA	NA	NA	NA	NA	NA	NA	
Camera Settings (So 10)	NA	NA	NA	NA	NA	NA	NA	NA	
Zoom (Optical/Digital)	NA	NA	NA	NA	NA	NA	NA	NA	
<b>Multimedia</b>									
Music Formats supported	NA	MP3	NA	NA	MP3	MP3	NA	NA	
Video formats supported	NA	NA	NA	NA	NA	3GP	NA	NA	
FM Radio (Y/N)	N	Y	Y	Y	Y	Y	Y	Y	
<b>Performance</b>									
<b>Signal Reception and Voice Clarity (So 10)</b>									
Zone 1 / Zone 2	6.5/6	7/2	6/6	6/3.5	6/5.5	7/5	6/3.5	6/5	
Device Earpiece / Loudspeaker clarity	6/4	7/6.5	7/5	5.5/4	5/7	6.5/6	5.5/5	5.5/5	
Speaker Volume (on call)	5	7	6	4.5	6.5	6	NA	5	
Bluetooth Transfer Speed (KB/s)	0	0	0	0	0	55.05	51.2	0	
<b>Captured Photo Quality (So 10)</b>									
Captured Photo Colour	NA	NA	NA	NA	NA	NA	NA	NA	
Captured Photo Crispness	NA	NA	NA	NA	NA	NA	NA	NA	
Captured Video Quality	NA	NA	NA	NA	NA	NA	NA	NA	
Loudspeaker Audio Quality	NA	6.5	NA	5	6.5	6.5	4.5	5	
Bundled Earphones Quality	NA	5.5	5	4.5	6	5.5	NA	4.5	
Video Playback Quality (So 10)	NA	NA	NA	NA	NA	NA	NA	NA	





\* Manufacturer Rated

FROM Rs. 2,501 to Rs. 4,200									
Intex IN 2020 E	Videocon V1306	Videocon V1402	Intex IN 4410	Intex IN 4420	Olive V-G200	g-Fone 565	Intex IN 4477	fly B430	Videocon V1405
Good audio quality	Good sound quality	Great keypad	Good build quality	Great keypad design	Strong build quality	Great audio quality	Attractive metal body	Great QWERTY keypad	Great battery life
Poor Camera	Poor battery life	Poor camera	Poor call quality	Average battery life	Poor touch screen	Average camera	Poor camera	Poor camera	Stiff keypad
2350	2800	2895	2990	3350	3499	3499	3790	3849	4050
									
47.35	43.50	47.55	47.69	53.13	43.96	56.62	54.57	56.13	52.19
23.55	22.8	22.2	24.45	24.8	27	27.5	27	27.1	26.8
23.80	20.70	25.35	23.24	28.33	16.96	29.12	27.57	29.03	25.39
Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar
GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800	GSM 900/1800
128 x 128	128 x 160	128 x 160	240 x 240	240 x 240	176 x 220	176 x 220	240 x 240	176 x 220	176 x 220
1.77	1.8	1.8	2.0	2.2	2.2	2.4	2.4	2.2	2
65K	NA	NA	65k	65k	NA	262K	242K	262K	NA
N	N	N	N	N	Y	N	N	N	N
1500mAh	1050mAh	1000mAh	1000mAh	1400mAh	2000mAh	1450mAh	1200mAh	1100mAh	1800mAh
106x49x15.9	108 x 45 x 14	107 x 46.5 x 14	102x45x14.5	112x48x13.5	115x51x16	110 x 53 x 13	114.8x48.5x13.2	111.3 x 60 x 13.4	109 x 45 x 16.5
microSD upto 2GB	microSD upto 4GB	microSD upto 4 GB	micro SD upto 4 GB	microSD upto 2GB	upto 4GB	microSD upto 4GB	microSD upto 2GB	microSD upto 8 GB	microSD upto 8GB
N	N	N	N	N	N	N	N	N	N
2	2	1	1	1	1	1	2	1	1
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	N	Y	N	N	Y
Java 2.0	Java	Java	Java 2.0	Java 2.0	Java	Java	Java 2.0	Java	Java
Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Regular	regular	regular	Regular	Regular	Regular	Regular	Regular	QWERTY	Regular
1000	1000	1000	500	1000	500	1000	1000	1000	1000
60 (20M,20R,20D)	NA	NA	60 (20M,20R,20D)	60 (20M,20R,20D)	NA	NA	60 (20M,20R,20D)	NA	NA
4 / 200	3 / 240	5 / 240	3.3 / 270	3.5 / 270	12 / 400	4 / 480	4 / 200	8 / 200	10 / 500
5	5	5	5	6	5	6	5	5	5
Y	Y	Y	Y	Y	N	Y	Y	Y	Y
GPRS	GPRS	GPRS	GPRS	GPRS	GPRS	GPRS	GPRS	GPRS	GPRS
USB	NA	NA	Bluetooth / USB	Bluetooth / USB	Bluetooth / USB	Bluetooth/USB	Bluetooth / USB	Bluetooth/USB	Bluetooth / USB
charger, battery, driver CD, head-phone, data cable	charger, battery, headset	charger, battery, headset	charger, battery, driver CD, head-phone, data cable	charger, battery, driver CD, head-phone, data cable	charger, battery, headset, data cable	charger, headset, battery, data cable	charger, battery, mobile case, head-phone, data cable	charger, battery, headset, data cable	charger, battery, headset
NA	NA	NA	NA	NA	NA	2GB	NA	NA	NA
5.5	5	6	5	6	7	6	8	6.5	6
5	5.5	6.5	5	5.5	7	6	7	6	7
5.5	6.5	7	5.5	5.5	6.5	7	7	6.5	6.5
0.3	NA	0.3	0.3	0.3	0.3	1.3	0.3	1.3	0.3
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N/N/N	NA	N/N/N	N/N/N	N/N/N	N/N/N	N/N/Y	N/N/N	N/N/N	N/N/N
N	NA	N	N	N	N	N	N	N	N
5	NA	5	5	5	4	6	5	6.5	5.5
N	NA	N	N	N	Y	Y	N	Y	N
MP3, AAC, AMR	MP3	MP3	MP3, AAC, AMR	MP3, AAC, AMR	MP3,MP4	MP3	MP3, AAC, AMR	MP3	MP3
3GP	3GP	3GP/MP4	3GP	3GP	MP4	3GP/MP4	3GP	3GP	3GP
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5.5/5.5	6/5	6.5/5	5/4	6/5.5	6.5/5.5	6.5/4	7/6.5	6/6.5	6/5
4/5.5	6.5/6.5	5.5/6.5	3.5/5.5	5.5/4.5	6/6	7/6.5	6.5/6.5	5.5/6	6/6
5.5	6	7	5.5	6	6	6.5	6.5	6.5	6.5
0	0	0	40	128	72	55.05	49.7	128	17
5.5	NA	5	4	5	5.5	6.5	4.5	4	4
4	NA	5	4	4.5	5	5	4	4	4.5
3	NA	4	5	6	5.5	5.5	3.5	4	4.5
6.5	6.5	5.5	5.5	6	6	5	6.5	7	5
6	5	5.5	5.5	5.5	5.5	6.5	5.5	7.5	5.5
3	NA	4	4.5	6	5	6	3.5	4.5	4



CATEGORIES	FROM RS. 4,201 TO RS. 6,000						
<b>Brand</b>	<b>ZTE</b>	<b>Nokia</b>	<b>Videocon</b>	<b>Intex</b>	<b>Samsung</b>	<b>g-Fone</b>	<b>fly</b>
<b>Model</b>	<b>GN281</b>	<b>3110</b>	<b>V1602</b>	<b>IN 5030</b>	<b>B2100</b>	<b>588</b>	<b>E 106</b>
<b>Price (Rs)</b>	<b>4499</b>	<b>4546</b>	<b>4595</b>	<b>4790</b>	<b>4850</b>	<b>5199</b>	<b>5549</b>
<b>Plus (+)</b>	Wide screen	Fast data transfer	Great keypad design	Triple SIM card	Strongest build quality	Good keypad design	Good overall design
<b>Minus (-)</b>	Poor touch response	Average keypad	Average sound quality	Slow data transfer rate	Stiff keypad	Average battery life	Poor touch response
							
<b>Grand Totals (Out of 100)</b>	<b>38.07</b>	<b>56.03</b>	<b>54.41</b>	<b>53.54</b>	<b>52.39</b>	<b>55.12</b>	<b>50.65</b>
<b>Features (Out Of 50)</b>	<b>18.8</b>	<b>23.7</b>	<b>27.8</b>	<b>26.7</b>	<b>25.8</b>	<b>26.45</b>	<b>23.45</b>
<b>Physical Specs</b>							
Form Factor	Bar	Bar	Bar	Bar	Bar	Bar	Bar
2G Network Bands	GSM 900 / 1800	GSM 900 / 1800 / 1900	GSM 900/1800	GSM 900/1800+CDMA800	GSM 850/900/1800/1900	GSM 900/1800, CDMA 800	GSM 800/900/1800/1900
Screen Resolution	NA	128 x 160	176 x 220	240 x 240	128 x 160	240 x 320	240 x 320
Screen Size	2.8inch	1.8 inch	2.2	2.0inch	1.77inch	2.2 inch	2.4
Maximum Screen colours	NA	256K	NA	65k	262k	NA	262K
Touchscreen / Dual Screen (Y/N)	Y	N	N	N	N	N	Y
Battery Rating	800mAh	1020mAh	1000mAh	1050mAh	1000mAh	1050mAh	1000mAh
Dimensions (H x W x L)	104 x 51 x 12	108.5 x 45.7 x 15.6	108 x 48 x 14.5	111x48x14.8	113 x 48.9 x 17.4	112 x 62.5 x 12.2	96.5 x 50 x 14.7
Weight	NA	87	NA	105	103	105	90
Expandable Memory Type	NA	microSD upto 2GB	microSD upto 8GB	micro SD upto 4 GB	microSD upto 8GB	microSD upto 8 GB	microSD upto 2GB
Hot Swappable	N	N	N	N	N	N	N
Available Colours	1	3	1	1	2	1	1
Dual SIM	N	N	Y	Y	N	Y	Y
LED Torch (Y/N)	N	N	Y	Y	Y	N	N
<b>Other Features</b>							
Operating System	Java	Symbian	Java	Java 2.0	Java MIDP 2.0	Java	Java
Charging via USB (Y/N)	Y	Y	Y	Y	Y	Y	Y
Hardware Keypad (Regular/QWERTY)	Touchscreen	Regular	Regular	Regular	Regular	QWERTY	Touchscreen
Address Book Capacity	NA	1000	1000	1000	1000	1000	1000
No of calls in register	NA	60 (20M,20R,20D)	NA	60 (20M,20R,20D)	NA	NA	NA
Talk Time / Standby Time *	NA	4 / 370	5 / 240	4 / 120	9 / 600	4 / 240	4 / 240
No of Profiles # / Customisable	5	7	5	5	6	5	5
Offline Operability (Y/N)	Y	Y	Y	Y	Y	Y	Y
<b>Connectivity</b>							
Browsing (GPRS/HSCSD/EDGE/3G)	NA	GPRS	GPRS	GPRS	GPRS/EDGE	GPRS	GPRS
Connectivity (WiFi/Bluetooth/IR/USB)	Bluetooth/USB	Bluetooth/IR/USB	Bluetooth / USB	Bluetooth / USB	Bluetooth/USB	Bluetooth/USB	Bluetooth / USB
<b>Accessories</b>							
Bundled Accessories	charger, head-set, data cable	charger, battery, headset	charger, battery, headset	charger, two batteries, driver CD, headphone, data cable	charger, battery	charger, headset, battery, data cable,	charger, battery, headset
Size of memory card provided	NA	1GB	2GB	NA	NA	NA	NA
Overall Build Quality (So 10)	5	6	7	7	8.5	5.5	7.5
Overall Ergonomics (So 10)	6	7	6.5	7	7	5	7
Keypad Design (So 10)	NA	6.5	7	7	7	7	7
<b>Camera Specs</b>							
Camera Resolution (Mega Pixels)	0.3	1.3	2	1.3	1.3	1.3	2
Video Capture Resolution	NA	176x144@15fps	NA	NA	15fps@176 x 144	NA	NA
Dual Cameras / Auto Focus / Flash (Y/N)	N/N/N	N/N/N	N/N/N	N/N/N	N/	N/N/N	N/N/N
Mirror for self portrait (Y / N)	N	N	N	N	N	N	N
Camera Settings (So 10)	6	6	6	5.5	5.5	5	6
Zoom (Optical/Digital)	Y	Y	Y	N	Y	Y	Y
<b>Multimedia</b>							
Music Formats supported	MP3	MP3/AAC	MP3	MP3	MP3/AAC/WMA/WAV	MP3	MP3
Video formats supported	3GP	3GP/WMA	MP4, 3GP	3GP	MP4/3GP/M4V	3GP/MP4	3GP
FM Radio (Y/N)	Y	Y	Y	Y	Y	Y	Y
<b>Performance (Out Of 50)</b>	<b>19.27</b>	<b>32.33</b>	<b>26.61</b>	<b>26.84</b>	<b>26.59</b>	<b>28.67</b>	<b>27.20</b>
<b>Signal Reception and Voice Clarity (So 10)</b>							
Zone 1 / Zone 2	6/3.5	7.5/7	6.5/4	6/2	6.5/6.5	6.5/4	7/2
Device Earpiece / Loudspeaker clarity	6/5	7/6	6/5	5/5.5	6/4.5	6.5/5.5	6.5/6
Handsfree Clarity	NA	5	5	5.5	5	6.5	5.5
Speaker Volume (on call)	5	5.5	5	6	5	6.5	6.5
Bluetooth Transfer Speed (KB/s)	51.2	142.2	78.76	25.6	91.4	58.5	0
<b>Captured Photo Quality (So 10)</b>							
Captured Photo Colour	4.5	6	6.5	5.5	6	6	6.5
Captured Photo Crispness	4	5.5	5.5	5.5	5.5	5	6.5
Captured Video Quality	4	6.5	5	7	6.5	6.5	6
Loudspeaker Audio Quality	4.5	6.5	5.5	7	6	6	6
Bundled Earphones Quality	NA	7	5.5	6.5	NA	5.5	5.5
Video Playback Quality (So 10)	4.5	6.5	5.5	6.5	6.5	6	6

\* Manufacturer Rated

ABOVE RS. 6,000			
Nokia 2700	Samsung C5130	fly MC 160	Samsung Metro S5200
5579	6200	6509	7439
Great camera quality	Great battery life	Great build quality	Great camera
Stiff keypad	Poor sound quality	Poor battery life	Poor navigation pad design
			
58.48	49.41	59.57	59.84
23.6	25.1	30	29.3
Bar	Slider	Bar	Slider
GSM 850 / 900 / 1800 / 1900	GSM 850/900/1800/1900	GSM 800/900/1800/1900	GSM 850/900/1800/1900
240 x 320	176 x 220	240 x 320	240 x 320
2.0 inch	2.2inch	2.4	2.1inch
256K	262K	262K	16M
N	N	N	N
1020mAh	1000mAh	1300mAh	800mAh
109.2 x 46 x 14	97 x 47.5 x 16.5	115 x 51 x 14.5	103.6 x 48.7 x 10.9
85	100.1	100	97.3
microSD upto 2GB	microSD upto 8GB	microSD upto 8GB	microSD upto 8GB
N	N	N	Y
3	1	1	2
N	N	Y	N
N	N	N	N
Symbian	Java MIDP 2.0	Java	Java MIDP 2.0
Y	Y	Y	Y
Regular	Regular	Regular	Regular
1000	1000	2000	1000
60 (20M,20R,20D)	90(30M,30R,30D)	NA	90(30M,30R,30D)
6 / 288	13 / 450	4 / 200	8 / 326.6
7	6	6	6
Y	Y	Y	N
GPRS	GPRS/3G	GPRS/EDGE	GPRS/EDGE
Bluetooth / USB	Bluetooth/USB	Bluetooth / USB	Bluetooth/USB
charger, battery, headphone, data cable	charger, battery	charger, battery, headset	charger, battery
1GB	NA	NA	1GB
7.5	7	8	7
7.5	7.5	7.5	7.5
6	7	7.5	7
2	1.3	3	3.2
176x144@15fps	176x144@15fps	NA	15fps@240X320
N/N/N	N/N/N	N/N/N	N/Y/Y
N	N	N	N
7	6	7	7
Y	N	Y	Y
MP3/MP4	MP3/WAV/eAAC+	MP3	MP3/AMR/SP MIDI/ACC/WMA
3GP/WMA	MP4/H.264/WMV	3GP	MPEG4/H.263
Y	Y	Y	Y
34.88	24.31	29.57	30.54
7.5/7	7/4.5	6.5/5.5	6.5/6.5
7/6	6.5/5.5	5.5/6	7/5
5.5	NA	5	6
7	5	6.5	6
128	91.4	65.64	138
7	6.5	7.5	7
7.5	6	7.5	8
7	6	7	8
7.5	6.5	6	6
8	NA	5	NA
7	6	6	7.5

## LG GX200

We received two LG phones way beyond our intimated deadline and we didn't have the time to test them thoroughly. Here is a short review of one of the phones, the LG GX200.

GX200 is an entry level dual SIM cellphone in a black and grey body. The phone has a 1.3MP camera with an LED flash. It has a strong build quality and is relatively heavier. The keypad is beautiful with a very well designed navigation pad. The side edges have the volume rocker on one side and a microSD card slot and micro

USB slot. The display of the phone is quite crisp.

The photo quality of the phone was decent enough. It has a friendly user interface with a four way shortcut key on the home screen which can be set to the four sides of the navigation pad. The speaker located on the rear side just beside the camera is quite loud.

All these features come at a hefty price tag of Rs. 6,500.



MC106 was the slowest. The earphone quality of the Samsung phones could not be tested as we did not receive them, so we have rated them a point lesser than the least score.

The Samsung Metro S5200 was adjudged as the Best Performer as it scored high in the features as well as the performance department. Its 3.2 MP

cent performance of the S5200 at an economical price point of Rs. 3,499.

Nokia 3110 emerged as the Best Buy in the third category. Apart from a good call quality, the 3110 also had a very good media player and camera which advanced its score in the real life tests. Also the pricing was just right at Rs. 4,546.

In the last category which had a mere three phones Fly MC 160 scored the second highest marks. Priced at Rs.6,509 it was on the higher side, but its performance was comparable to S5200.

On the whole we observed that the call quality on all the phones was decent enough and that the smaller brands compete well with the larger ones. We're also seeing a wealth of features trickling down to more affordable levels. These phones are very good alternatives to the zero-warranty policy Chinese phones that one comes across on nearly every street. **d**





## Speaker test

### Ubuntu 10.04 (Lucid Lynx)

The beta is available for download; Gnome 2.3 and KDE SC 4.4 included. Head over to <http://bit.ly/fKunG>

### Bing Maps

Microsoft's Bing Maps now allows users to scan the skies as well

**Audiophile equipment doesn't end with headphones. Speakers have been rejuvenated, it's time to give your ears what they really deserve!**



# Crank it Up



## Symbian Silverlight

Microsoft to launch Silverlight for the Symbian platform soon

## Goodbye Firefox 3.0

As Mozilla issues its last update, check out our hunt for the world's fastest browser on Thinkdigit.com (<http://bit.ly/aXnGod>)

Speaker test

Rossi Fernandes

[rossi.fernandes@thinkdigit.com](mailto:rossi.fernandes@thinkdigit.com)

The most action packed movie, the most exciting of games, the highest quality audio can only truly be enjoyed on an equally good set of speakers. Imagine watching Transformers on a pair of cheap headphones without the stomach churning bass or the screaming sounds of missiles flying from one corner of the room to another. Desktop speakers aren't there to simply amplify the sound you would hear on your laptop speakers—they manage to get you a whole lot closer to the real thing and that's what huge TVs and projectors are meant to do, right?

It's time now for our yearly roundup of speakers. We're hoping that a lot has changed and things are moving upwards again. Last we checked, the desktop speaker market was going south. The home theater market on the other hand seems to be more happening with many more models coming up. We called in models from all of the brands we could find. We got well over 50 speakers in all ranging across all categories.

As always, we split up the

speakers into categories, each pertaining to a particular kind of user and needs. The three primary categories we fixed on were 2.0 speakers, 2.1 speakers and surround speakers (4.1 and 5.1 speakers).

For those who find themselves new to these terms, 2.0 speakers are those without the subwoofer and just the two primary speakers. The 2.1 category includes speakers with an additional woofer which is responsible for the low frequencies of the sound spectrum. These two categories are for pure music enthusiasts who will, every now and then use the speakers while watching movies. The surround sound speaker category is meant to give solutions for movie buffs and gaming enthusiasts. The need for surround sound is essential to them. We also received a few iPod docks and portable speakers that would be handy for those travelling very often. You'll find them all over this test.

This was going to be an exciting test also because of some new brands that made an appearance, most notably

being Sony which is by now well known in the consumer electronics market. A brand by the name of F&D also made an entry with lots of interesting products of all shapes and sizes. Our regular participants – Creative, Altec Lansing, Artis and Zebronic were present with some new models as well. Maybe, things weren't looking too bad after all.



### 2.0 speakers

A group of 12 speakers make up the list of contenders for the 2.0 speakers category. There were speakers starting from as little as Rs. 225 going right up through the roof to Rs. 15,000.

### Features, design and build quality

When we think of build quality in the history of desktop

speakers that have come to the Test Centre, one of the first products that comes to mind is the Audioengine A2. This time around, it's still the best built product in this category. We've tested them in the past and we still love them. Everything about the product speaks of attention to detail and quality. The driver cones are made of kevlar, the connectors at the back and the cable quality are also top notch. The dial feels like something that would go into a space shuttle console.

Creative isn't only about the Inspire lineup. Sure, they have an edge over some of the smaller vendors, but their cheaper models aren't particularly well built.

Their Gigaworks lineup on the other hand sets things straight. The Gigaworks HD50 model means business. Cable quality for example, is fantastic. The body quality is comparable to the Audioengine A2. The front covers come off revealing a very clean and well crafted frame and drivers. The volume control has a good feel to it and for those who like a little bling, it

## ALTEC LANSING ORBIT USB IML237

Those travelling and computing on a laptop might want to look at the Altec Lansing Orbit USB IML237. Technically, it's only a single full-range driver that is powered by USB. It's got an in-built sound card, so you don't really need to use a 3.5mm jack.

Coming to the power, it's loud enough if you're the only one sitting in front of it. Audio quality is decent and the tone is pretty normal. There is no bass-producing mechanism hidden in it. The sound quality in general is decent, but it can be pretty annoying listening to music from one side. The optimum position would be exactly in front of you but then you'd have to do something silly like keep your laptop to one side.

The design is very attractive, with a clean golden look, like those found on some Subaru Impreza cars. There's a small foldable stand which lets the speaker face you and the quality of plastic used is good. The IML237 is a handy product that comes with a carry pouch and strap. Our only problem is that it doesn't come with a 3.5mm jack to connect other devices to it, and its price of Rs. 2,790, makes it ridiculously expensive and hard to recommend.





## Twitter turns four

Twitter, the microblogging phenomenon turned four in March

## Hands-on video

NVIDIA shows us two incredible 7-inch tablet PCs - the Compal and Indian made EAF Magic Tile (<http://bit.ly/a7mWRg>)

has a bright blue light. The base of the speakers have a layer of rubber, which ensures that the speakers don't slide around.

The next well designed speaker set was from Creative as well - the Gigaworks T40 Series II. The speakers are attractive, but the build quality isn't in the same league as the more expensive HD50.

The two speakers from F&D in the category were also pretty good. They are more compact, and draw power via USB. The F&D V520 are the cheaper of the two models. The V620 model was smaller but built better than the V520 and has a glowing base.

The models from Altec Lansing weren't particularly impressive. Of course, look and design are subjective. The volume for example, on the FX2020 is controlled using buttons and not a dial. The design change that Altec Lansing has adopted is a flat acrylic panel, which has a driver barrel at the center of it.

Some speakers, however, use somewhat conventional designs. The Altec Lansing FX3022, for example is adver-



F&D V620

tised as a 2.2 speaker set as it has a downfiring bass driver in each satellite. The Altec Lansing VS2620 are a slightly odd looking set of speakers. The design is a bit like a pyramid with rather flimsy stands.

In the case of the Zebronic ZEB-S2100, the design of the speakers



Zebronic S2100

isn't impressive and that's something we noticed about Zebronic speakers in general. Although they might be decent in performance, it has a very plain boxy design - simple, but functional.

### Performance

We've tested them in the past and we still love them. We're talking about the Audioengine A2 again. The only complaint is the lack of bass, which understandably isn't its strong point. Highs are rendered beautifully, with decent precision. The mid-range frequencies are reproduced well, unless a good amount of bass is demanded, or other complexities are added to the mix. Still, it outperforms the others by miles.

The HD50 is decent however. The audio quality is very good - they aren't as vibrant as the Audioengine A2 but they come very close - a great achievement for a small speaker set. Low bass is almost non-existent and that's something best noticed in the woofer bass test track. The 20Hz is inaudible, 50Hz just about makes it and the rest works very well which makes a good contender for the number one spot in terms of performance.

The Gigaworks T40 Series II is definitely a big notch up on the HD50 in terms of power. In terms of quality, they are somewhat comparable. Although a



Creative Gigaworks T40 Series II

lot larger and more powerful, there is almost no benefit in the bass rendering department. The sounds are pretty neutral and bass-treble control set is provided if you feel like tweaking things a bit. There was clear distortion at higher volumes. Bass fails in some of the low frequency ranges.

The Altec Lansing FX3022 is good at higher volumes and there isn't any audible distortion in the sound. The high frequencies are well balanced and they don't get too shrill. Drums sound great, but we would have liked a little more punch. So, do the inbuilt woofers in the satel-

## LOGITECH PURE-FI MOBILE

While the Altec Lansing iML237 is for the really portable type, those with space enough to carry a small umbrella should look at the Logitech Pure-Fi Mobile. In design, it's a single plastic bar with a rubberised back and four drivers built into the face of it. Build quality is rugged but styling has been maintained.

The speakers perform well - they are very loud for their size, but there is some distortion which is expected on something this compact and thin. The extreme high-end frequency range is audible, but a lot of detail is lost out. This is typically the region in which the cymbals of a drum kit are.

The party piece however is the inbuilt battery pack, which ensures you're never left powerless and music-less. Bluetooth support means there is no need for cables either. All this basically means that long train rides or picnics will no longer have to be entertained by small mobile phones. At Rs. 10,995, it's not exactly cheap, so you better be a very outgoing person.



## Google TV?

Google has apparently joined hands with Sony and Intel to bring out set top boxes

## AMD hexa-core processors

Rumours are that the new AMD x6 processors will be clocked between 2.6GHz and 2.8GHz

Speaker test

## LOGITECH PURE-FI ANYTIME

**A**nother one of Logitech's fancy portable docks is the Pure-Fi Anytime. The key difference here is the inclusion of an iPod port. The option for connecting a other sources is still available. The sound system isn't as compact as the Pure-Fi Mobile so there's space for large buttons and even a usable LED display on it.

Audio quality is average but the high frequencies seem toned down. As an iPod dock for a medium sized room, it's pretty good. There's little or no distortion which is a good thing. The dock comes with loads of features though. It has a snooze timer, FM/AM radio tuner which works rather well we found.

The Pure-Fi Anytime sells for Rs. 6,795, which is a lot more affordable than the Pure-Fi Mobile that we've also reviewed. It's louder, has more features than will be used by any of us. In performance too, it trumps the Pure-Fi Mobile in every test.



lites help? The down firing bass drivers are an improvement over other 2.0 speakers for sure, but are in no way a for a dedicated subwoofer. There is also a lot of muddling up of detail with complex metal tracks.

The Sony SRS-Z50 is a more compact set as compared to the others. The quality of these speakers is decent and the audio signature pretty natural.

If at all, the highs sound toned down. The high-frequency bell samples we used revealed distortion in that range. This makes the sound a little unnatural at times.

### 2.1 speakers

2.1 speakers add the vital ingredient required to shakes things up a bit – the woofer. After going through the first

batch of speakers, it was time to turn things up a notch. This was a free-for-all with all the brands participating. These speakers would be best suited for music enthusiasts.

### Features, design and build quality

When we lifted Gigaworks T3's woofer, we expected quality from it. It's heavy and built very

well. Cables provided are very long and are very well shielded. The wired remote has a rubberised texture. We had nothing to complain about in terms of looks or build quality.

The Altec Lansing MX6021 looks like a replacement for the very successful MX5021. The MX6021 comes with a remote control that has a huge dial on it which is used to control the

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SEBI  
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NSE  
Barclays  
Stumpp Scheule  
GE Money  
Religare Realty  
ITC Maurya  
Hyatt Regency  
Taj Lands End  
ICICI Knowledge Park  
Hindustan Aeronautics  
CP Office Mumbai  
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Barco  
Jubilant Organosys  
Hero Honda Motors  
Accenture  
Diamond Board

Partial List

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## Internet Explorer 9

Internet Explorer 9 will not be available to Windows XP users however you can try IE8 from our bonus DVD

## Plextor comeback

Plextor returns to the market with a 128GB SSD

volume, bass and treble settings for the speakers. It's not a very straight-forward way of doing things, but it's a nice looking control to have on your table. A much heavier remote would've been better though. The control, however, isn't calibrated proportionately – the volume shoots up rapidly in the last 20 per cent. The MX5021's remote was a lot simpler and effective. The woofer is a monster, just like the one in Sony's DB500 setup. The woofer is taller than the MX5021's. The satellite design is similar to some of the other Altec Lansing models – flat acrylic panels with the driver built into it. The tweeter is the addition seen on the MX6021.

Sony products are expected to be expensive but designed well. The Sony SRS-DB500, which is a 2.1 solution, came with a monster subwoofer – one of the largest in this test. The satellites look attractive, but they came with sub-standard cables which was probably the cause of the hiss we could hear.

The brand F&D is relatively new. Their models, the A310 and A520 came with very light subwoofers. The cables with the A310 aren't great quality and are pretty short as well.

The Intex IT-10500W don't look like desktop speakers.

## HOW WE TESTED

The test system used was based around a dated Intel Pentium 4 processor, with 2 GB of Corsair DDR2 memory with a standard HD-playback capable graphics card. We used the Creative Audigy 2 Platinum sound card. Foobar2000 ([www.foobar2000.org](http://www.foobar2000.org)) was the player of choice bundled with the WASAPI output plugin for all the music tests. The latest graphics drivers were used for the sound card. VLC was used for the single HD video sample. The drivers were setup properly for 5.1 and 2.1/2.0 and the speakers were spaced out equally on either side. The woofer was placed on the ground on one side away from the table.

All the audio samples used were in the lossless FLAC format. The first barrage of samples included constant frequency tones ranging from the very low 20Hz right up to 15kHz. In the end, there was a 30 second

frequency sweep of the same range. We paid attention to any kind of distortion or disturbance during certain frequencies and even the inability to play them.

Next in line were the high-quality environment samples. They included sounds of the ocean gushing in and the sound of rain and animals in the distance. We rated them on how natural they sounded, and how well sounds were separated and reproduced.

The music tracks used were the elegant Tori Amos - Cornflake Girl which was a mix of piano and female vocals. The second track, was from the metal band Between the Buried and Me called Selkies - An Endless Obsession. The track has everything from clean vocals to screaming vocals and solos, to double-bass drumming and tons of instruments playing alongside each other. A good speaker should be able to produce each instrument clearly

without overpowering one another or even distorting the sound.

We used an action packed sample HD video from the movie Transformers where an army base is attacked. Plenty of canons going off, gunfire and low-frequency booms in this one. Only a good setup with an equally good subwoofer can do justice to a movie like this.

We also rated the build quality and paid close attention to the material and feel of the dials and buttons on the speakers. We rated the kind of stands used, and of course, the body of the speakers themselves.

Each of the speaker's categories were given different weights for the performance bit. Obviously, the HD movie test would be of little sense on a 2.0 speakers. In the big picture however, features was a small fraction of the entire score and performance, the largest portion.

There are a few issues. First, you need to be sitting away from the PC to be using these speakers – some 4-5 ft or so to be able to hear everything

clearly. Next, you should also be sitting at the same level as the speakers and these speakers obviously can't be placed on top of a table. The design is made to look good, as floor-standers.

Logitech's entry for the category was the Z523 which comes with a large subwoofer. One of the things we noticed was that

the woofer moved all over the place when the volumes were turned up.

The Creative Inspire M2600 was one of the least inspiring products as far as design goes. It's a model that has been around for some time now. The stands are weak, and not very helpful in keeping the speakers stable. The remote too, is flimsy.

The Tech-Com SSD-2100FM was one of the more poorly designed speakers around. The



Creative Gigaworks T3

## PHILIPS SBD7000

Every iPod dock needs to stand out, with users expecting the same design and performance as their iPods. The Philips SBD7000's design is bold, and looks like a huge driver with provision for an iPod at the center. The dock isn't as sturdy as the Logitech Pure-Fi Anytime, but it is compact enough to be carried around in a back pack. The packaging for the product is designed to be like a Tupperware box.

The speaker can be powered by four AA batteries that fit snugly into the back of the product. It also has a 3.5mm analog port that allows you to connect other devices to it. It's not very loud nor is it precise by any standards. It's a novelty, and feels like a toy, which might get boring after a while. The complete light plastic feel doesn't make things any better. The Philips SBD7000 sells for around Rs. 6,500 which once again is expensive for most of us.



## 12X Blu-Ray Writers

A company by the name of I-O DATA is launching 12X Blu-Ray writers



Logitech Z523

dials used in particular were of poor quality and feel like they'd break off after a month or two. The very simple looking S222 from Zebronics weren't attractive. The wooden framework of the speakers ensures that they are pretty light but sturdy at the same time.

The JBL Creature III speakers were the boldest looking speakers of the lot. The satellites and woofer are designed like an octopi without giving up too much on functionality. The volume controls are two flat buttons on one satellite – it isn't good and there's no feedback. The bass and treble controls are on the woofer. The design is fancy and typically, people expect them to be average at best. They eventually turned out to be a pretty decent sounding speaker set.

### Performance

The JBL Creature III was a relatively good performer.

Altec Lansing MX6021



All through the tests, we noticed vibrations from the woofer frame, and there's also a very faint hiss at high volumes, but nothing that can be directly compared to the cheaper speakers we tested. The sound is a little bright but a few adjustments to the bass and treble levels correct that. The woofer is not heavy because it's made of plastic, but there is a punch to it – nothing like the 300 and 500W speakers but pretty good for its size. Metal tracks sound good, but nothing spectacular. One of the good things is the thick solid bass hits, which make drums sounds rather nice.

While all of the good performers in the category were pricey as well, there were a few interesting models. One of those was the Zebronics ZEB-SW2600W. In its case, the woofer volume needed to be

turned up to maximum to get a good amount of bass. Without, the speakers aren't much fun. The treble goes really high if you play around with the control – the higher end doesn't sound natural and loses its crispness as

**digit**

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Speaker test

See page 48 for digit subscription offer of the month



## Surround speakers

Brand	Artis	Artis	Creative	Creative	F&D	Intex	Intex	Logitech	Mitashi
Model	S5555-USB	X-15	Inspire T6100	Inspire T6160	F6000	IT-2600	IT-5400FM	Z-5500	PH-106FU
Price (Rs.)	Rs. 5,500	Rs. 13,500	Rs. 5,499	Rs. 4,999	Rs. 9,990	Rs. 1,800	Rs. 5,200	Rs. 27,995	Rs. 5,190
Overall (Out of 100)	42.28	41.69	37.65	41.32	47.60	33.39	34.33	59.70	38.64
Features (Out of 15)	7.65	5.25	5.25	6.75	7.65	6.75	9.15	12.00	9.15
Performance (Out of 85)	34.63	36.44	32.40	34.57	39.95	26.64	25.18	47.70	29.49

## Features

### Speaker Specifications

Power Rating (RMS Watts)	NA	NA	76W	50W	191W	44W	105W	505W	90W
Subwoofer	NA	NA	26W	20W	120W	20W	30W	188W	40W
Center	NA	NA	18W	NA	15W	NA	NA	69W	NA
Satellites (Front/Rear)	NA	NA	8W x 4	6W x 5	14W x 4	6W x 4	15W x 5	62W x 4	10W x 5

### Audio specifications

Frequency response range	NA	NA	40Hz - 20kHz	40Hz - 20kHz	20Hz - 20kHz	40Hz - 20kHz	40Hz - 20kHz	33Hz - 20kHz	40Hz - 20kHz
Driver Diameter									
Sub-Woofer	NA	NA	NA	NA	10-inch	4-inch	5.25-inch	10-inch	3-inch
Satellites	NA	NA	NA	NA	0.5, 3-inch	3-inch	3-inch	3-inch	5.23-inch

### Connectors on Speaker Set

Analog connects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Digital connects	N	N	N	N	N	N	N	Y	N

### Controls on speaker / remote

Bass (Y/N)	Y	N	Y	Y	Y	Y	Y	Y	Y
Treble (Y/N)	N	N	N	N	N	Y	N	N	N
Volume (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Others (List)	N	N	N	N	N	N	N	N	N

### Bundled Accessories

External Decoder (Y/N)	N	N	N	N	N	N	N	N	N
Power Adapter (Y/N)	N	N	Y	N	N	N	N	N	N
Remote control (Wired / Wireless)	Y / Wireless	Y	N	Y	Y / Wireless	N	Y / Wireless	Y - Wired/Wireless	Y / Wireless
Built-in FM Tuner (Y/N)	N	N	N	N	N	N	Y	N	Y

### Performance (Out of 10)

#### Frequency test

20Hz	0	3.5	2	2	3	1	0	3	0
50Hz	3	4.5	2	2	5	1.5	0	6	1
100Hz	3.5	5	2.5	3.5	5	2.5	2	5.5	2
500Hz	4.5	5	4	4	4.5	3	2.5	6	2.5
1000Hz	4.5	4	4.5	4	4.5	3	2.5	5.5	4
10000Hz	4.5	4	4	4.5	4.5	3	2.5	5.5	4
15000Hz	4	4	3.5	5	4	2	3	6	4
Frequency Sweep - 20Hz - 15,000Hz	4.5	4.5	4	4	5	3	4	6	3.5

#### Quality Tests

Drums	3.5	4	4.5	4	4.5	2.5	2.5	4.5	4.5
Bells-High Freq	4	3.5	4	4	3.5	3	3	4	3
Choir-Mids	4.5	4.5	4.5	4	4.5	3.5	2	6	4
Environmental	4	4.5	4	4	4	3	3	5.5	4
Tori Amos - Cornflake	4.5	3.5	4	3.5	4	3	3	5	3.5
Between the Buried and Me - Selkies	4.5	4	4	4	4	3	3	5	4
Ultimate Bass Test	4	4	3.5	4	5	3.5	2	6.5	4.5
HD Movie Test	4.5	5	3.5	5	6	4	4	6.5	3

#### Build Quality

Dials	2	3.5	3.5	3	4	1.5	2	5.5	2
Speaker veils	3.5	5	5	3.5	5	5	3.5	5	4
Stands	4	4	2.5	4	5	3	3.5	6.5	4
Overall build quality	4.5	4	4.5	4	5	2.5	4.5	6.5	4

well. The mid range is rendered clearly and that's what makes these speakers good. They do wonders for drums and also the thick heavy distortion guitars that lie in the upper mid-range frequency band. A little more detail from the speakers would have been good. With a low price,

it stood a good chance of winning the Best Buy award for this category.

The Logitech Z523's powerful woofer produced loads of low bass but the entire package felt like a good woofer bundled with moderate quality satellites. The woofer although powerful

and very able to move its weight on the floor wasn't as accurate as we'd like. It makes better sense for movies but not so much for music. The Creative Gigaworks T3 had a better woofer.

The Sony SRS-DB500 had a similar flaw. The audio quality from the satellites

wasn't so great. The woofer did better for sure - it makes a lot of noise and its one of the more powerful woofers in this test. We wish it could give out more detail and be more accurate in the harder beats which matter the most. Watching movies can be a lot of fun on this system.

Sony	Tech-Com	Tech-Com	Tech-Com	Zebronics	Zebronics
SRS-D511	SSD-5001R	SSD-5600R	SSD-6000R	ZEB-SW2900	ZEB-SW7000R
Rs. 9,000	Rs. 2,275	Rs. 2,075	Rs. 2,575	Rs. 1,350	Rs. 2,750
40.04	32.71	39.31	38.88	35.79	43.43
6.75	6.15	7.65	7.65	6.75	7.65
33.29	26.56	31.66	31.23	29.04	35.78
50W	80W	65W	65W	38W	80W
25W	30W	25W	25W	18W	30W
NA	NA	NA	NA	NA	NA
5W x 5	10W x 5	8W x 5	8W x 5	5W x 4	10W x 5
30Hz - 20kHz	10Hz - 45kHz	20Hz - 20kHz	20Hz - 20kHz	40Hz - 20kHz	40Hz - 20kHz
120mm	NA	5.25-inch	5-inch	4-inch	4-inch
57mm	5.25-inch	3-inch	3-inch	3-inch	3-inch
Y	Y	Y	Y	Y	Y
N	N	N	N	N	N
Y	N	Y	Y	Y	Y
N	N	N	N	Y	N
Y	Y	Y	Y	Y	Y
N	N	N	N	N	N
N	N	N	N	N	N
N	N	N	N	N	N
Y	Y / Wireless	Y / Wireless	Y / Wireless	N	Y / Wireless
N	N	N	N	N	N
2	0	1	1.5	1.5	2.5
1.5	1.5	2	3	2	2
3.5	2	3	3.5	3	3.5
3.5	3	3.5	3.5	3.5	4.5
4.5	4	3.5	4	3.5	4.5
4	3.5	3.5	4	4	4.5
4	4	3.5	3.5	3	4
4	3	3.5	3.5	4	4.5
4.5	3	4	4	3	5
4.5	3	3.5	3	3	4.5
4	3.5	4.5	4	3.5	3.5
4.5	3	4	4	3.5	4
4	3	4	4	3	4
4	3	4.5	3.5	3	4
4	3	4.5	3.5	3	3
3.5	3.5	3.5	4	4	5.5
3.5	2	2	2	2	2
5	4	3.5	3.5	5	3
4	4	4	4	4	4
4	4	4.5	4.5	4.5	4

## Surround speakers

With technology moving rapidly to makes things more and more realistic for the end user with the introduction of 3D TVs and media, it's important that surround-sound audio makes a comeback. It was an in-thing a decade ago and often, very expensive. These days however, there's no shortage of brands and models.

## Features, design and build quality

The Logitech Z-5500 was the most feature-rich and the coolest looking, and coincidentally, it has been that way for the last couple of tests. It's a full-fledged 5.1 surround sound powerhouse designed to shake up everything that isn't nailed down in your room. The woofer is heavy and large, and the

satellites are no dwarves themselves. A centre console accepts input, analog and digital, from the source and sends it to the woofer. The same console handles all the effects and settings for all the channels. Of course, you get a nice display of all these values. This is the only speaker set to have all these features.

The Tech-Com SSD-6000R was one of the prettier consoles on a speaker. Unlike the Logitech Z-5500, the



Logitech Z-5500

screen was built into the woofer. There are all kinds of visual graphic equalisers you see on there. Getting 5.1

In terms of size, the next largest thing we received was the F&D F6000. It too came with a really huge woofer, just like the Artis X-15. The X-15's woofer was heavier and shaped like a stool. The unfortunate thing was the size of the X-15 satellites. One can fit in some 10 to 20 satellites in that woofer. The rear speakers for the X-15 require stands. Without them, they are pretty unstable.

The Zebronics ZEB-SW7000R is a proper 5.1 speaker set that has a somewhat fancy design but not everyone is going to be fond of it. The drivers on the satellites have no covers on them so they are prone to damage.

## Performance

The Zebronics ZEB-SW7000R is powerful and sufficient for most movies and music listeners. The sound is crisp which is good for music and also does good things for movies with lots of action. There are a few small glitches though. In our extreme woofer test, we could hear clear distortions and vibrations coming



Zebronics SW7000R



## 2.1 Speakers

Brand	Altec Lansing	Altec Lansing	Altec Lansing	Altec Lansing	Altec Lansing	Artis	Creative	Creative	Creative	Creative
Model	BXR1221	FX3021	MX6021	VS2621	VS4121	S222	Gigaworks T3	Inspire M2600	Inspire S2	Inspire T3130
Price (Rs.)	Rs. 1,390	Rs. 4,990	Rs. 9,990	Rs. 2,290	Rs. 3,990	Rs. 2,100	Rs. 16,699	Rs. 1,800	Rs. 5,999	Rs. 2,699
Overall (Out of 100)	36.96	39.03	45.86	39.28	37.41	41.47	47.97	38.13	42.31	37.24
Features (Out of 15)	3.75	5.25	8.25	3.75	6.75	6.75	6.75	6.75	5.25	6.75
Performance (Out of 85)	33.21	33.78	37.61	35.53	30.66	34.72	41.22	31.38	37.06	30.49
Features										
Speaker Specifications										
Power Rating (RMS Watts)	9W	33W	200W	28W	31W	NA	NA	29W	29W	25W
Subwoofer	5W	25W	68W	13W	19W	NA	NA	17W	17W	15W
Center	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Satellites (Front/Rear)	2W x 2	4W x 2	66W x 2	7.5W x 2	6W x 2	NA	NA	6W x 2	6W x 2	10W x 2
Audio specifications										
Frequency response range	50Hz - 18kHz	40Hz - 20kHz	40Hz - 20kHz	45Hz - 18kHz	25Hz - 15kHz	45Hz - 20kHz	NA	40Hz - 20kHz	40Hz - 20kHz	NA
Driver Diameter										
Sub-Woofer	4-inch	135mm	6.5-inch	100mm	6.5-inch	5.25-inch	NA	NA	NA	NA
Satellites	2-inch	50mm	3-inch, 1-inch	50mm	NA	3-inch	NA	NA	NA	NA
Connectors on Speaker Set										
Analog connects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Digital connects	N	N	N	N	N	N	N	N	N	Y
Controls on speaker / remote										
Bass (Y/N)	N	Y	Y	N	Y	Y	Y	Y	Y	Y
Treble (Y/N)	N	N	Y	N	Y	Y	N	N	N	N
Volume (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Others (List)	N	N	N	N	N	N	N	N	N	N
Bundled Accessories										
External Decoder (Y/N)	N	N	N	N	N	N	N	N	N	N
Power Adapter (Y/N)	Y	Y	N	N	N	N	N	Y	Y	N
Remote control (Wired / Wireless)	N	N	Y	N	N	N	Y	Y	N	Y
Built-in FM Tuner (Y/N)	N	N	N	N	N	N	N	N	N	N
Performance (Out of 10)										
Frequency test										
20Hz	2	1	1	1	1	2	2	2	2.5	0
50Hz	2.5	2	3	2	3	3	4.5	2	2.5	1
100Hz	2.5	3.5	4	3.5	3.5	4.5	4.5	3	2.5	2.5
500Hz	2.5	4.5	4.5	4	3.5	4.5	5	4	3	4
1000Hz	3.5	4.5	4.5	4.5	3.5	4.5	5	4	4	4.5
10000Hz	4	4.5	4.5	4.5	4	4.5	5	4.5	4.5	4.5
15000Hz	4	4.5	4.5	4.5	4.5	4	5	4.5	4.5	4
Frequency Sweep - 20Hz – 15,000Hz	5	3.5	5	4	4	5	5.5	4	5	4
Quality Tests										
Drums	4	4	4.5	4.5	3.5	4.5	5	4	4.5	4.5
Bells-High Freq	3.5	4	4.5	4	4.5	3.5	4.5	3.5	4	4
Choir-Mids	4.5	4.5	4.5	5	3.5	4	5	4	4	4
Environmental	4	5	5	5	3.5	4	4.5	4	5	4
Tori Amos – Cornflake	4.5	3.5	5	4	3.5	4	4	3.5	5	3
Between the Buried and Me – Selkies	4.5	3.5	4	4	3.5	4	4.5	4	4.5	3
Ultimate Bass Test	3.5	4.5	4	4.5	3	3.5	6	3	4.5	3.5
HD Movie Test	3.5	4.5	4.5	4.5	3.5	4	5.5	3.5	4.5	4
Build Quality										
Dials	3	4	4	4	4	4	5	3.5	4	3
Speaker veils	3	3	3.5	3	5	5	3	5	4	3
Stands	4	4	5	4	3	5	5.5	3.5	4	4
Overall build quality	4.5	4	5.5	4	4.5	5	6.5	3.5	5	3.5

	F&D	F&D	Intex	JBL	Logitech	Mitashi	Sony	Tech-Com	Tech-Com	Zebronic	Zebronic
	A310	A520	IT-10500FM	Creature III	Z523	PH-12T	SRS-DB500	SSD-1800FM	SSD-2100FM	ZEB-SW2400	ZEB-SW2600W
	Rs. 2,990	Rs. 3,990	Rs. 7,500	Rs. 6,490	Rs. 6,795	Rs. 999	Rs. 9,999	Rs. 625	Rs. 975	Rs. 990	Rs. 1,100
	38.01	40.37	34.43	44.15	41.39	27.35	45.31	29.22	30.92	40.96	42.68
	5.25	5.25	8.25	6.75	5.25	3.75	9.15	5.25	8.25	6.75	6.75
	32.76	35.12	26.18	37.4	36.14	23.60	36.16	23.97	22.67	34.21	35.93
	36.5W	52W	84W	25W	40W	14W	NA	14W	40W	38W	38W
	13.5W	22W	NA	15W	21W	8W	NA	8W	20W	18W	18W
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11.5W x 2	15W x 2	42W x 2	5W x 2	9.5W x 2	3W x 2	NA	3W x 2	10W x 2	10W x 2	10W x 2
	30Hz - 20kHz		50Hz - 20kHz	45Hz - 20kHz	35Hz - 20kHz	20Hz - 20kHz	NA	30Hz - 18kHz	30Hz - 20kHz	40Hz - 20kHz	20Hz - 20kHz
	NA	6.5-inch	NA	3-inch	NA	3-inch	160 mm	4-inch	4-inch	NA	NA
	NA	4-inch	4-inch	40mm	NA	NA	65 mm	3 x 2-inch	3-inch	NA	NA
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	N	N	N	N	N	N	N	N	N	N	N
	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y
	N	N	Y	Y	N	N	Y	N	Y	Y	Y
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	N	N	N	N	N	N	N	N	N	N	N
	N	N	N	N	N	N	N	N	N	N	N
	N	N	N	Y	N	N	N	N	N	N	N
	N	N	N	N	N	N	Y/WL	N	N	N	N
	N	N	Y	N	N	N	N	Y	Y	N	N
	1.5	2	1	0	1.5	1	0	0	0	1.5	2
	2.5	2.5	2	2	3.5	2	4	1	1.5	2	3
	4	4	2	4.5	4	2.5	4	2	2.5	3.5	4
	3.5	4	2.5	5	4.5	2.5	4	2.5	2	4	4.5
	4	4	3	5	5	3	4	2.5	2.5	4.5	4.5
	4	4	3.5	5	4.5	3	4.5	3	2	4.5	5
	4	4	2.5	5	4.5	3	4.5	2	2	4.5	5
	4.5	5	4	5	5	3.5	5	4	3	4	4
	4	4	3.5	5	4	2	4	2	2.5	4.5	4.5
	3.5	3.5	3	4.5	4.5	2.5	3.5	3	2.5	3.5	4
	4	4	3	4.5	4.5	3	4.5	3	2.5	4.5	4.5
	4	4.5	2.5	4	4	3.5	3.5	4	3	4.5	4.5
	3.5	4	3	4.5	3.5	3	4	3	2.5	4	3.5
	4	4.5	3.5	4.5	4	3	4	3	2.5	4	5
	4	4	3	5	5	2.5	5.5	2.5	3	4.5	4
	4	4.5	3	4.5	4.5	2.5	5	3	3.5	4	4.5
	3.5	3.5	2.5	4.5	3.5	3	4	1	1.5	2	3
	4	5	3	3	5	3	5	3	5	5	5
	4	4.5	4	3	4.5	3	4	3	3.5	4	4
	4.5	4.5	4.5	4.5	4.5	2.5	6	3	2.5	4	4.5



## 2.0 Speakers

Brand	Altec Lansing	Altec Lansing	Altec Lansing	Altec Lansing	Audioengine	Creative	Creative	F&D	F&D
Model	BXR 1220	FX2020	FX3022	VS2620	A2	Gigaworks HD50	Gigaworks T40	V520	V620
Price (Rs.)	Rs. 990	Rs. 4,390	Rs. 6,790	Rs. 1,590	Rs. 10,400	Rs. 14,999	Rs. 9,499	Rs. 590	Rs. 885
Overall (Out of 100)	34.35	36.94	41.70	34.83	55.26	45.31	44.60	35.47	39.74
Features (Out of 15)	3.75	3.75	3.75	3.75	3.75	3.75	5.25	3.75	3.75
Performance (Out of 85)	30.6	33.19	37.95	31.08	51.51	41.56	39.35	31.72	35.99
<b>Features</b>									
<b>Speaker Specifications</b>									
Power Rating (RMS Watts)	NA	25W	25W	5W	30W	36W	32W	2.4W	NA
Subwoofer	NA	NA	9W x 2	NA	NA	NA	NA	NA	NA
Center	NA	NA	NA	NA	NA	NA	NA	NA	NA
Satellites (Front/Rear)	NA	7.5W x 2	3.5W x 2	2.5W x 2	15W x 2	18W x 2	16W x 2	1.2W x 2	1.2W x 2
<b>Audio specifications</b>									
Frequency response range	180Hz - 20kHz	100 Hz - 20kHz	40Hz - 16kHz	90Hz - 20kHz	65Hz - 22kHz	NA	50Hz - 20kHz	90Hz - 18kHz	NA
<b>Driver Diameter</b>									
Sub-Woofer	NA	4-inch	NA	NA	NA	NA	NA	NA	NA
Satellites	2-inch	1.5-inch	NA	3-inch	2.75-inch, 20mm	NA	NA	NA	NA
<b>Connectors on Speaker Set</b>									
Analog connects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Digital connects	N	N	N	N	N	N	N	N	N
<b>Controls on speaker / remote</b>									
Bass (Y/N)	N	N	N	N	N	N	Y	N	N
Treble (Y/N)	N	N	N	N	N	N	N	N	N
Volume (Y/N)	N	Y	Y	Y	Y	Y	Y	Y	Y
Others (List)	N	N	N	N	N	N	N	N	N
<b>Bundled Accessories</b>									
External Decoder (Y/N)	N	N	N	N	N	N	N	N	N
Power Adapter (Y/N)	N	Y	Y	Y	Y	Y	Y	N	N
Remote control (Wired / Wireless)	N	N	N	N	N	N	N	N	N
Built-in FM Tuner (Y/N)	N	N	N	N	N	N	N	N	N
<b>Performance (Out of 10)</b>									
<b>Frequency test</b>									
20Hz	1	0	0.5	1	2.5	0	0	3	2.5
50Hz	2	1	4	1.5	3.5	1.5	2	3.5	2.5
100Hz	3	4	4	2.5	4	4.5	4	3.5	2
500Hz	3	3	4.5	3.5	6	4.5	4.5	3	2.5
1000Hz	3.5	3.5	4.5	3.5	6	4.5	4.5	3.5	4
10000Hz	4	3.5	4.5	3.5	7	4.5	5	4	5
15000Hz	4	5	4.5	4.5	7	4.5	5	4.5	5
Frequency Sweep - 20Hz – 15,000Hz	4.5	4	5	4.5	6.5	5	5	4.5	4.5
<b>Quality Tests</b>									
Drums	4	4.5	5	4	6.5	5.5	5.5	4	4
Bells-High Freq	4	4	5	3.5	7	4.5	5	3.5	4.5
Choir-Mids	2.5	4	4.5	4	6.5	5	4	2.5	4.5
Environmental	3.5	4.5	5	4	7	5	5	3	4.5
Tori Amos – Cornflake	4	4	4.5	3	6	5.5	4.5	4	4
Between the Buried and Me – Selkies	4	4	4.5	4	6	5.5	5	4	5
Ultimate Bass Test	3	3.5	4	3.5	4	3.5	4.5	3.5	3
HD Movie Test	3.5	4	4.5	4	4.5	4.5	4	4	4
<b>Build Quality</b>									
Dials	3	4	3	2.5	8	6.5	6	3	3
Speaker veils	3	3.5	3.5	3.5	8	5	5	4	6
Stands	5	4.5	4.5	3.5	8	8	5	5	7
Overall build quality	5	5	5	5	8	7.5	6	5.5	6

from within the woofer frame. There are even some squeaking sounds from inside the center channel during the frequency sweep test. Other than these, all seems good with this set. The price only makes the deal sweeter.

The Logitech Z-5500 goes through all the tests with

flying colours. The power itself is overwhelming and it does very well with fast-paced action movies. The satellites produce surround sound very well, and being proportionately powerful, add to the experience. The sound is natural for the most part, but there is space for

improvement in the detail producing capability of the speaker set as a whole. The bass tends to be a flabby as well.

In most cases in this category, we found the sub-woofer to be highly under-powered, or the speakers to be very shrill. The Creative

T6160 for example had great surround sound for a small audience sitting in front of a computer screen. There was accurate and smooth transition of audio from one channel to another. The overall sound however was very flat and the lack of a deep bass limited the experience.

## Show off your audio equipment

Post your latest purchases and seek buying advice at this thinkdigit forum thread: <http://bit.ly/6LSMMH>

Speaker test

Sony	Tech-com	Zebronics
SRS-Z50	SSD-401 USB	ZEB-S2100
Rs. 4,200	Rs. 225	Rs. 550
33.26	26.53	36.02
3.75	3.75	3.75
29.51	22.78	32.27
NA	NA	6W
NA	NA	NA
NA	NA	NA
NA	NA	3W x 2
NA	100Hz - 18kHz	100Hz - 18kHz
NA	NA	NA
NA	NA	3-inch
Y	Y	Y
N	N	N
N	N	N
N	N	N
Y	Y	Y
N	N	N
N	N	N
Y	N	N
N	N	N
N	N	N
0	0	3
2	1.5	3
2.5	2	3.5
3	3	3
3.5	3.5	3.5
3.5	3	3.5
4	4	3.5
4	3	4.5
4	3	3.5
3	2	3.5
3.5	1.5	4
3	4	3
3	2.5	4
4	2	4
3	2	3.5
3.5	2	4
4.5	3	3.5
5	5	5
5	8	5
5	4	5

The vocals weren't very nice either as bass would mix up or be reproduced by the satellites once the volume was increased.

The F&D F6000 was also very good for music and movies. However, we heard some serious noise at the extreme low-end of the fre-

CONTACT DETAILS				
Brand	Contact	Phone	E-mail	Web site
Altec Lansing	Rashi Peripherals Pvt. Ltd	+91-22-67090828	response@rptechindia.com	www.alteclansing.com
Artis	Kunhar Peripherals Pvt. Ltd	+91-98201 36204	sales@kunhar.com	www.artis.co.in
Creative	Vinod Thakkar	+91-22-6451 0751	india_getcreative@ctl.creative.com	www.creative.com
F&D	Fenda Audio(India) Pvt. Ltd,	+91-11-4502 0119	customer@tveindia.com	www.fenda.com
Intex	Intex Technologies Ltd	1-800-11-6789	info@intextechnologies.com	www.intextechnologies.com
Logitech	Rashi Peripherals Pvt. Ltd	+91-22-67090828	response@rptechindia.com	www.logitech.com
Philips	Philips Pvt. Ltd	1800-10-22929	customer@philips.com	www.consumer.philips.com
Sony	Rashi Peripherals Pvt. Ltd	+91-22-67090828	response@rptechindia.com	www.sony.co.in
Tech-Com	Shree Sagarmatha Distributors Pvt Ltd	+91-11-2642 8541	dlh@techcomindia.com	www.techcomindia.com
Zebronics	Top Notch Infotronics India Pvt Ltd	+91-44-4393 6000	enquiry@zebronics.info	www.zebronics.net

quency spectrum (around 20Hz). It sounded like some of the speaker internals colliding with each other. Imagine a 10-inch driver trying to move 20 times a second; something's bound to go wrong. It almost feels like F&D went overboard with the woofer and totally forgot about the satellites.

### The final verdict(s)

This year's speaker test has seen new comers and more competition in the market. It's almost always results in good products. Looking at 2.0 solutions, it was clear from the very beginning that the Audioengine A2 was a step ahead of the others. The A2 is one of the products at the base of their lineup and they cater to somewhat audiophile audience. Still, it's a deserving performer in the 2.0 category. The Best Buy award which is given to products that offer the best bang for the buck goes to the F&D V620. In comparison to the others, it might look small, but with its portability, it could be a good laptop companion. At Rs. 885, it's one of the cheapest speakers we received. The Zebronics ZEB-

S2100 is the next best VFM suggestion.

For a large room full of people, it's back to the Audioengine A2 – they're ridiculously loud for the size. The Creative Gigaworks HD50 is a great set as well but the price tag of Rs. 14,999 is a bit much.

If you're looking for value

output is better than the others by quite a bit.

Among all the surround sound speakers, the best value for money award goes to the Zebronics ZEB-SW7000R. At 2,750, it's easily affordable. At 80W, it's not exactly weak either. If you want over-the-top power, good audio quality, then there



2.1 speakers, you only have to spend Rs. 1,100, on the Zebronics ZEB-SW2600W. For that much, you get audio quality and performance that matches products priced at five to six times its price. If your budget isn't Rs. 1,100, and more like Rs.16,699, then the Creative T3 should be on your shopping list. Creative claims the speakers have Audiophile Grade Drivers and there seems to be some truth to the statement. The quality of all the components and sound

really is no recommendation other than the Logitech Z-5500.

There has been good development in the speaker market. We've now moved on to speakers that are not just powerful but more precise. It would be good to see more and more audiophile class manufacturers entering the desktop speaker market. If you haven't already bought a speaker set, and are itching to do so, it's a good time to do it – decent products at very economical prices. **d**



# Secure your career

Frequent attacks, fraud, economic espionage, computer hacking involving the smallest companies to giants like Google makes IT security a career option worth looking at



PHOTOS.COM

Siddharth Parwatay  
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**B**ack in January, Google announced in a blog post that it has been the victim of a highly sophisticated and targeted attack on their corporate infrastructure. If a giant like Google can fall prey to an information security breach, then what about others? With increasing dependence on the digital medium, IT security has become very important. Any and every industry which has data at rest or data in motion can be a victim. In this scenario, IT security professionals are the new soldiers of this war in the new frontier.

For someone who is interested, IT security is perhaps the most upcoming and challenging option available. Unlike other branches of IT, security is relatively impervious to recessionary upheavals. Besides, jobs in the software or programming domain can become monotonous. Chances are a person who enters as a Java,

Cobol or C programmer will end up doing just that all through his career. "Whereas security is an evergreen field" says Rakesh Goyal. "As long as there will be information and digital assets, as long as there are people after these assets, there is bound to be a need for IT security professionals," he adds. Rakesh Goyal is a veteran of IT security with 18 years, six books and 50 research papers under his belt. He is the Managing Director of Sysman Computers Private Limited and Director-General, Centre for Research and Prevention of Computer Crimes. "Five different levels



Rakesh Goyal, MD, Sysman Computers Pvt. Ltd

**"Salary-wise professionals here command salaries that are least 1.5 to 2 times higher than the regular programmers"**

of encryption algorithms were recently broken by leveraging the increase in computing power of new age processors," he informed us. Every assignment is new and every experience is a learning experience. Hackers are finding holes in everything, so professionals either have to be reactive or proactive. Being reactive you have to respond to attacks and plug those holes, and when proactive you have to think ahead of these miscreants. "The demand is increasing and there is a shortage so naturally I don't need to mention that salaries are higher", says Goyal. "Salary-wise professionals here command salaries that are least 1.5 to 2 times higher than the regular programmers."

## The roadmap

Like any industry, there are some entry barriers and prerequisites in the form of certifications and qualifications. Yet, as it turns out, IT security is pretty open. "There are commonly known security certifications like CISSP from (ISC)2, GCIA, GCIH from GIAC which are widely accepted as entrance criteria. However, candidates with strong computer networking fundamentals and an inclination towards reverse engineering technology have a very good chance of succeeding in the industry," says Shantanu Ghosh, Vice President – India, Product Operations, Symantec Software India Pvt Ltd.

CEH is an entry level certification for awareness of different mechanisms to compromise networks. There are organisations which are recognised for the certifications they offer. ISACA (Information Systems Audit and Controls Association), IISCCC (International Information Systems Security Certification Consortium), and ISEB which stands for Information Systems Examinations Board – are some of the bodies that conduct exams and accredit certification. Exams are either conducted online or at various centers, even in India. "There are also specialised post graduations in Engineering offered by different universities which are focused on information security," said Ghosh.

## Essentials

An enterprise security professional should have security certification, very

## Security flaw

According to a recent survey conducted by Harris Interactive, about 12 per cent of IT professionals admitted to knowingly violating IT policy in order to get work done

## Another boy wonder?

Sunny Vaghela, 22 year old self proclaimed cyber security expert is planning to launch a website to analyse cyber crime complaints. It will be run by a team of ethical hackers who are students.

Work@tech

strong fundamentals in network communication, and very good analytical skills. Goyal had a fair warning to all aspirants of this field “Read read and read”. Unlike other domains in the IT sector, in information security you constantly need to be updated on things. “Engineers finish their B.E and then they become complacent,” he adds. This will certainly not do when it comes to IT security. Apart from these, good IQ, analytical skills and a natural curiosity about how networks work cannot be ignored.

## Job roles

IT security or information security as a field has a very broad coverage. Opportunities exist in managing/administrating security devices, reporting/auditing on IT infrastructure, penetration testing, Compliance reporting and management, as well as various engineering/security research roles in security product companies like Symantec who build security software products. You can specialise in one aspect or you can have overall coverage of all the domains.

The responsibilities will vary depending on the domain which the security specialist belongs to. Most large organisations have segregation of duties defined so security personnel can focus on those specific domains. In the Security Response domain, AV analysts focus on providing quick mitigation to security threats which are observed in the network. Experts are responsible for providing mitigation to vulnerabilities as they are disclosed and providing mitigation for security risks whose information can be derived from security patches released by vendors.

They get to work on products that secure the email infrastructure or the instant messaging infrastructure of an organisation by keeping out spam, spim and viruses.

“Security domain encompasses

## Certification reckoner

CISA	Certified Information Systems Auditor	Audit oriented	Information Systems Audit and Control Association <a href="http://www.isaca.org">www.isaca.org</a> . Exams conducted in India
GCI	Certified Intrusion Analyst	Technology and networking oriented	<a href="http://www.giac.org">www.giac.org</a> Online exam
GCIH	Certified Incident Handler	Technology oriented	<a href="http://www.giac.org">www.giac.org</a> Online exam
CISSP	Certified Information Systems Security Professional	More technology oriented	International Information Systems Security Certification Consortium <a href="http://www.isc2.org">www.isc2.org</a> . Exams conducted in India
CEH	Certified Ethical Hacker	Very basic course and exam	Conducted by European Council

multiple sub areas of specialisation like anti-fraud protection, anti-spam protection, network intrusion protection, desktop protection, compliance management, data leakage prevention, incident response”, informs Shantanu Ghosh

The most glamorous sub-domain however is ethical hacking or in security parlance – penetration testing. We spoke to a penetration testing professional, Siddhesh Shenvi working for AAA Technologies, which specialises in the field of Information Systems (IS) Audit and security consulting. “We have to sign NDAs (Non Disclosure Agreements) and operate under full authority given by our clients to penetrate and test the vulnerability of their systems,” says Siddhesh. He added,

**“Every industry which has data at rest or data in motion needs to have IT Security personnel”**

“This being the most challenging domain, we’re working with the newest technologies in the sector. Suppose a system is behind a firewall, put in DMZ mode, or there are access control lists, and dual authentication systems;

we bypass these security measures and gain access to the system”. He also informed us that despite being the most challenging, penetration testing is by far the most interesting aspect of IT security. “Here learning is a continuous, never ending process. Whatever knowledge you acquire is a treat, and still just a drop in the ocean”.

## Career paths

The career path is dependent on the work domain the individual is currently in. “At Security Response Labs, engineers can grow from Security Engineers/Analysts, to Principal Engineers/Analysts,” says Ghosh from Symantec. As they grow in these roles they will address standalone malware threats as well as network security issues.


Software development professionals

## Sub-domains under IT security

Information Security Audit  
Application Audit  
Business Continuity Management  
Fraud/Forensics Investigation  
IT security consulting  
Research  
IS security management for business  
Network penetration testing  
Database/Network Administration  
Network hardening  
Policy formulation

are expected to have thorough knowledge of computer networking, various programming languages and the flaws that may exist while programming in these languages.

## Last words

As per a survey conducted by (ISC)2, the unfavourable economic situation did not negatively impact the security while on the contrary 51.4 per cent in the Asia Pacific region received salary increases in 2009. This career presents several international opportunities in the Asia Pacific region as well as the western world. This is because the shortage of IS professionals abroad is even more acute. Besides, the public sector in India is also a great source of employment. 



Shantanu Ghosh, VP, India Product Operations, Symantec Software India Pvt. Ltd.



**Moore to the rescue**

Hollywood actress Demi Moore saved a distressed teenager from committing suicide, by raising an alarm on Twitter

**Judgement**

Twitter users, aka tweeple, declared Australian PM Kevin Rudd the winner in the nation's healthcare debate



These days you can't avoid Death, Taxes and Twitter

Nishith Rastogi

readersletters@thinkdigit.com

**T**witter is a microblogging service that lets you update your status in 140 character or less. In recent times, it has become an influential social network and learning its API is a must for any web developer aiming to have a full arsenal. Here we present a quick overview of the same.

For the uninitiated, API stands for "Application Programming Interface", typically providing a way for third-party developers to interact with a software product or web service. For Twitter, there is an official API available that provides a 'method' for every feature that is available via the original Twitter web site, including, but not limited to, posting, retrieving, sorting, searching and the like. The HTTP protocol is used by programs to talk to the Twitter API.

The Twitter API is divided into two primary parts: the "Rest API" and the "Search API". In very simple terms, everything but search is handled by the Rest API (such as posting a tweet and adding friends) and the Search API is the dedicated interface for searching.

Typically, there are libraries available for using the API with various languages that save you time and effort. We'll be using the Python-Twitter wrapper over the Twitter API.

**Your first call**

Fire up your Python shell, or open up your favourite Python IDE and let the code flow. Our first step would be to create an instance of the `twitter.Api`

class. This can be done in two ways, one with authentication (which will effectively allow you to use the Rest API methods) and the other being without Authentication (for pure searching and status retrieval purpose).

```
>>> import twitter
>>> digit = twitter.Api()
[With Authentication]
>>> import twitter
>>> digit = twitter.
Api(username='Your_Twitter_
```

```
subiet@Cub9: ~$ python
Python 2.6.4 (r264:75706, Dec 7 2009, 18:45:15)
[GCC 4.4.1] on linux2
Type "help", "copyright", "credits" or "license()" for more information.
>>> digit = twitter.Api(username='digit_subiet', password='password')
>>>
```

No, the password is not 'password' for the 'digit\_subiet' account

```
Username', password='Your_Twitter_
Password')
```

The first line imports the Twitter library into the environment (the Python-Twitter wrapper) and the second creates an instance called "Digit" of the `twitter.Api` class.

Class names are case sensitive and `twitter.Api` will result in an error. Another caution to exercise is to not name your file `Twitter.py` in case you are using an IDE or using a file to batch process, because in that case while doing a `import Twitter` it will give an error.

**Once in, what next**

Now that we have logged in, let us see what fun stuff can we do. Starting with the obvious, let us post a Hello World! tweet to announce our arrival.

```
>>> status = digit.
PostUpdate('Hello World!')
```

Notice how we are storing the return value of `PostUpdate` in `status`. `status` is actually a class with the following properties. Other classes are `DirectMes-`

# I R Twogrammer

Twitter has taken the world by storm. Learn how you could get hold of the mileage and create apps for the largest microblogging site on the internet

```
sage and User, which are detailed later.
status.created_at
status.created_at_in_seconds
#read only
status.favorited
status.in_reply_to_screen_name
status.in_reply_to_user_id
status.in_reply_to_status_id
status.truncated
status.source
status.id
status.text
status.relative_created_at
#read only
status.user
```

If you want to post a tweet and then print the name of the user who updated it in your console it will be

```
>>> status = digit.
PostUpdate('Hello World!')
>>> print status.user.
name
```

(it is `user.name` since `user` itself is a class with multitude of properties including `user_id`, `profile_image_url`, etc and so on).

The `status.id` field is very important, as it used as the Unique Identifier for the tweet, in case you want to manipulate it later like mark it as favourite or delete it.

So the code for posting something and then effectively destroying it would be

```
>>> status = digit.
PostUpdate('Hello World!')
>>> digit.
DestroyStatus(status.id)
```

Let us now see how we can get the timeline of any Twitter user

```
>>> st1 = digit.
GetUserTimeline('Twitter_
handle', No_of_Status)
to print them, you can do the
following
>>> for s in st1 :
...     print s.user.name,
...     print s.user.screen_name, " : "
...     print s.text
```

## Facebook apps contest

What you learn from this month's Fast Track could win you Rs. 20,000 in exciting prizes. Take part in Digit's Facebook Apps contest by going to [www.thinkdigit.com/d/fb\\_contest](http://www.thinkdigit.com/d/fb_contest)

## Linkedin Apps

Go to [learn.linkedin.com/apps/](http://learn.linkedin.com/apps/) for resources on creating your own LinkedIn apps

Developer corner

```
... print
Here, s is a structure of type status
and you can use any of the properties
mentioned above. What's life without
friends? To follow some top Twitter users
in an easy way, here you go
```

```
>>> friends = ["Oprah",
"Twitter", "Google"]
>>> for friend in friends:
...     try:
...         digit.
CreateFriendship(friend)
...     except Exception:
...         print "Already
friends with %s" %friend.name
...
```

This will add all the friends in the friend list, in case you are already friends with anyone, it will just print that name.

If you want to see a list of your friends with their last updated status message, you can do the following

```
>>> friend_list = Digit.Get-
Friends()
>>> for username in friend_
list:
...     print username.screen_
name, username.status.text
...
```

This will return the fol-  
lowing:

google 2 days, 6 startups, 25 entrepreneurs, 60mph. Hop on the startup bus! <http://bit.ly/cRJycX#sxsw> (via @GoogleAtWork)

Twitter Tweet what's hap-  
pening-and where! <http://bit.ly/9nXjj0>

Oprah 15 minutes tune in to my Oscar special. Some cool celebs interviewing each other.

## GETTING PYTHON-TWITTER

### For Windows Users [building from source]:

1. Download the wrapper from the following location <http://code.google.com/p/python-twitter/>
2. In case you don't have simplejson (JSON is data interchange format), you can get that too from the following location, though on most installs it will be there by default <http://pypi.python.org/pypi/simplejson>
3. Untar the Python-Twitter package you just downloaded and run the following at the console

```
python setup.py build python setup.py install
```

### For Linux Users:

1. Either you can follow the exact steps above to build the wrapper from source or you can simply download and install the package from your distribution's repositories. For Debian-based distros it will be `sudo apt-get install python-twitter` Python-Twitter has minimal dependencies and is pure Python and should generally install without problems.

The GetFriends method returns a User type structure which has the following properties.

```
user.id
user.name
user.screen_name
user.location
user.description
user.profile_image_url
```



Three new celebrity friends, only if life was this simple

```
user.url
user.status
```

The above example hints at, but still doesn't give the usefulness of the power that a programmable interface bestows upon you. Below we write a small code in which you automatically start following all users who are following you.

```
friend_list = digit.GetFol-
lowers()
for username in friend_list:
    try:
```

```
digit.
CreateFriendship(username.id)
except Exception:
    print "Error %s"
%username.name
and now when you will do the fol-
lowing, you will see the added users.
>>> friend_list = Digit.Get-
Friends()
>>> for username in friend_
list:
...     print username.screen_
name
```

Let us now take the example where you are using Twitter to publicise an event/cause and you want to send a Direct Message to all your friends, a task nearly impossible doing manually if you have lots of users.

```
>>> friend_list = Digit.Get-
Friends()
>>> for username in friend_
list:
...     Digit.
PostDirectMessage(username.
id, "sample Text")
```

If you want to send it to the followers, then you can use the Digit.GetFol-  
lowers line above  
`import time`



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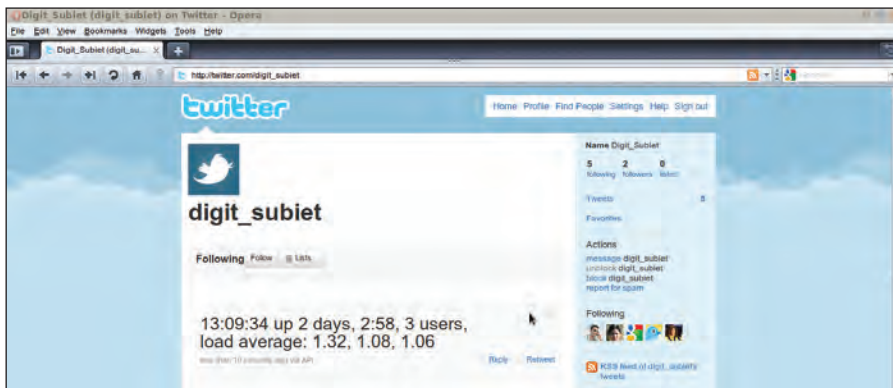


## Google Gears

Read an interesting article on Google Gears, go to <http://www.thinkdigit.com/d/gears/>

## .NET resources

If you're a .NET developer, read an informative post on the Digit forum at <http://www.thinkdigit.com/d/dotnetresources/>



A very useful application via an unintended use for Twitter

```
while 1 == 1:
    digit.
PostUpdate(getoutput('uptime'))

print(getoutput('uptime'))
time.sleep(300)
```

The above code updates a Twitter account with the system uptime information every 5 minutes (60x5). While 1 == 1 basically runs it as an infinite loop.

## The final exercise

As our final exercise, we will make a Twitter bot, which is nothing but a Twitter account that starts following any user who posts a status update containing a particular phrase

```
import Twitter
import time

#to allow for sleeping
digit = Twitter.
Api(username='digit_subiet',
password='digit_subiet1')

while 1==1:
    statuses = digit.GetPublicTimeline()
    for status in statuses:
        if status.text.
```

```
find('digit') != -1:
    try:
        digit.CreateFriendship(status.
user.id)
    except
Exception:

print "Error %s" %status.user.
name

time.sleep(300)
#to prevent server abuse
status.text.find returns lower
index when it finds a string and
-1 when it doesn't. Some other
methods that you might find
useful are the following, they
are self-explanatory and work as
above.

api.GetUser(user)
api.GetReplies()
api.GetFriendsTimeline(user)
api.GetFeatured()
api.GetDirectMessages()
api.DestroyDirectMessage(id)
api.DestroyFriendship(user)
api.GetUserByEmail(email)
```

## Rate limiting

To prevent abuse, Twitter limits the number of requests you can make to their servers. For the Rest API methods, the limit stands at 150 Http GET requests per hour, which effectively means updating your status doesn't count towards your limit. But requesting friends data and other requests where you are polling data from their servers do. When you hit the rate limit, your GET requests gets an HTTP 400 response code. The limit is enforced via IP and Authenticated

account.

For search API, there is no "disclosed" limit, but is far higher than 150. Effectively you can ignore the Search API limit. If you are finding yourself strangled by the Rest API limit ever too often, just fill in the "Whitelisting Request Form" available at [http://twitter.com/help/request\\_whitelisting](http://twitter.com/help/request_whitelisting). Once approved, you can make up to 20,000 request per hour.

## Further reading

Due to space constraints we have not covered all the options and possibilities of the Twitter API, if the above got you hooked and you are interested in exploring more, here are a couple of more suggestions for you.

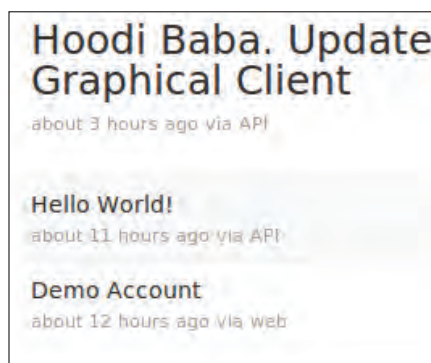


Indicates the use of Twitter API as a method of posting

One common question that comes to everyone's mind is how to append from [your\_app\_name] at the end of your tweet, when posting from your custom app, instead of the current from API. The first step towards that is registering your application at [http://twitter.com/oauth\\_clients/new](http://twitter.com/oauth_clients/new). You'll have to use the OAuth library to authenticate your app with the consumer key and secret key generated above. Details of this process should not be more than a Google away.

There are multiple Python wrappers available for the Twitter API, what we have covered over here is just one of them and should suffice for all purposes, but you want to explore more here is comparison with quick and dirty examples for other wrappers. [d](#)

For more on code development, sign up for the free dev.dorks fortnightly newsletter. Go to [www.thinkdigit.com/newsletter](http://www.thinkdigit.com/newsletter)



Indicates the use of Twitter API as a method of posting



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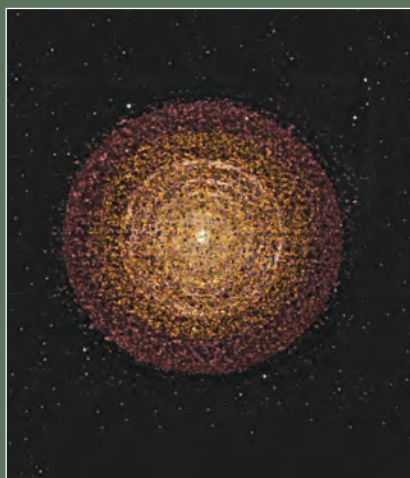
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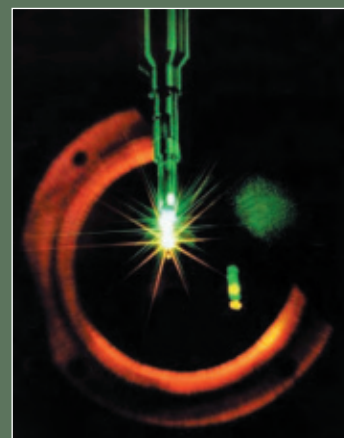


## Technology that will save the world

*Are your nerves on end in anticipation of an oncoming apocalypse? Do you have that nagging feeling that civilisation has gone too far? Environmental alarmists, religious historians and doomsday prophets are all predicting the end of the world. Fear not! Technology is here to rescue the planet. Most of these technologies are well beyond the scope of current science, but the dreams of these technologies, and what they promise may just about distract us from the constant twenty first century nuclear backdrop.*



**MATRIOSHKA BRAIN:** The Matrioshka Brain is a device that can swallow up and use the entire output of a star. Although this can be achieved using a large array of satellites, the most common model is a shell of energy absorbing material all around the star. This is very similar to a Dyson Sphere, which is basically a star enclosed within a solar panel - but the Matrioshka Brain goes one step farther. The Brain uses the entire energy output of a star as the energy source for a computer. That's right, the Matrioshka Brain is a star sized computer. If mankind ever brings itself to make one of these, we are pretty sure that the designers will throw in too few USB ports, and even this computational beast would need periodic RAM upgrades. We're kidding, actually, scientists are hard pressed to find any uses for so much computation power. Start up intergalactic Twitter though, and the fail whale may still appear.



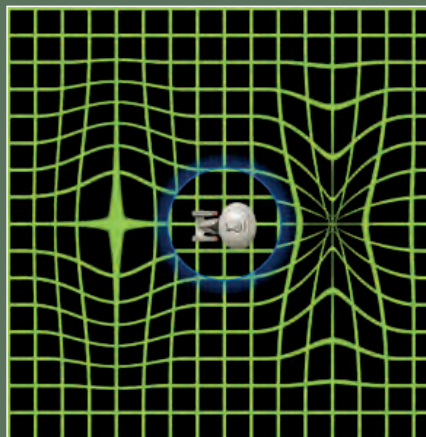
**NUCLEAR FUSION:** This one has been a tough nut to crack. If and when we manage to contain and sustain Nuclear Fusion for appreciably long amounts of time, we will be opening a Pandora's box of sorts. While not exactly giving us infinite energy, it would put in a lot of juice into our power grids. China will most definitely be able to build space lasers, Japan can go about powering giant mechanical flying robotic exoskeletons, and all the CRT monitors still lying about offices in India can continue on their long, and slow death. The best bet we have so far is the Joint European Torus (JET), which spat out 10MW of fusion power over 0.5 seconds way back in 1997. Or, we could just get the Chinese to start on the dyson sphere already. Pictured above is a "microsun" experiment.

**NANOTECHNOLOGY:** The scientists fooling around with small things are indulging in spine chilling experiments already. Fresh from the labs report mosquitoes that inject vaccines instead of diseases, and tiny robotic doctors that administer gene therapy from inside individual cells. Using light, atomic or graphene based computing would be a quantum leap forward in terms of computational power, but the real scope of the emerging technologies are in the spheres of materials, and biotechnology. Nanotechnology is the kind of disruptive progress that has the potential to drastically affect all other fields.

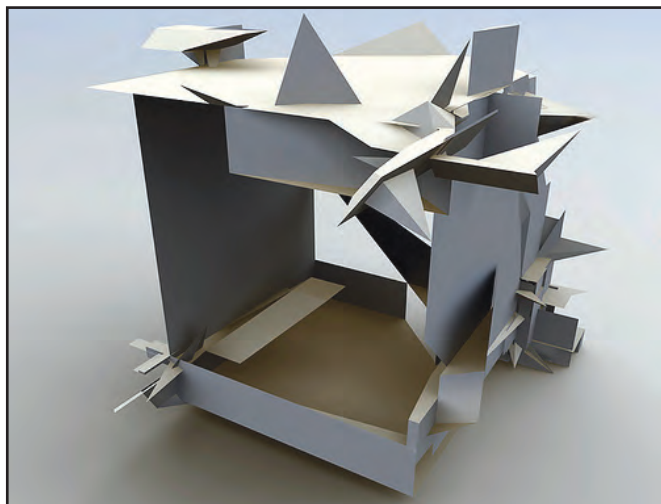


**THE INTERNET:** If you think the internet has come far, think again. The true potential of the internet is not even being hinted at, at this point of time. They are trying to put an IP address into everything, including, say the box in which a router comes in. Right now, only humans are using the internet. Pretty soon, refrigerators, hospitals and the bowl used to feed milk to the stray cat could all tweet a shopping list to the local grocery store. We're thinking "in-your-face" in a more literal sense as well, maybe your skull will have an IP address too, and augmented reality overlays beamed to your visual cortex. The Internet after a 1000 years would be wild and exotic.

**FASTER THAN LIGHT TRAVEL:** Don't worry, Einstein won't really have a problem with this, despite of what you might have heard. Einstein convincingly argued that nothing can be accelerated faster than light. That does not automatically rule out faster than light travel though. There are supposed particles that travel faster than light to begin with. Also, some scientists working with obscure branches of mathematics and physics claim that if you come up with a device to bend or warp the space-time around the craft, then it can travel large distances without accelerating faster than light. The loophole is that you bring Z to where A is, instead of taking the effort of hauling yourself from A to Z. Neat huh? (PS: Wormholes won't work, matter does not survive singularity the way it went in).



## Spam Architecture



Visualisation of data is an enthusiast hobby, and there are some amazing examples around. This piece is from the artist Alex Dragulescu, and is generated by converting various aspects of spam into architectural plans. The project is simply described as "various patterns, keywords and rhythms found in the text are translated into three-dimensional modeling gestures." More visualisations and other projects can be found at [www.sq.ro](http://www.sq.ro).

## Mosquitoes become anaesthetists



If Professor Shigeto Yoshida from (where else?) Japan, has his way, then mosquitoes will immunize people against malaria and other diseases, instead of spreading them. This bizarre use of technology is to replace some of the cells in the salivary glands of the mosquito, with cells that produce the vaccine against malaria. This may be novel, and creative, and we are sure you are already busy extrapolating other possibilities of the technology, but one of the biggest worries is the affect to the biosphere when such transgenic insects are released to the wild. Additionally, there would be no medical supervision over the amount of bites, the dosage administered, and possible allergic reactions from individuals. However, the approach is radical, and solves a number of problems at once, turning the principle vector of the disease into the cure.

## NEWS

### YouTube - Viacom courtroom drama

This one is about as strange as it can get, and it is not some hack company claiming rights over some obscure pieces of code this time around. Two of the biggest, and most powerful companies in the world are fighting it out in court, and things are getting ugly. Viacom filed a US\$ 1 Billion suite against Google's video uploading and sharing service, YouTube, alleging that a number of videos present on YouTube were infringing on the copyright of the content that belonged to Viacom. The case has been going on since 2007, and there is a fresh twist to the tale. The YouTube representative in court alleged that the copyright was infringed by the copyright owners themselves. They claim that Viacom had been paying people to take content that belonged to Viacom, change the quality of the content to make it look amateurish, and then upload the content on to YouTube. YouTube alleges that there were a number of marketing agencies put to work in this manner, as it would help Viacom win the case. Maybe someone should inform both Viacom and YouTube about ISOHunt.



Stackopolis is a very addictive flash game that is pretty challenging. The gameplay is similar to tetris, but the blocks are already on the floor when the game starts. You just have to pick them up and re-arrange them according to a template shown on the left. The levels get increasingly complicated.

## digitDIARY

Rossi's speaker test changed the local environment a bit. The frequency sweeps gave the local vets a hard time, and there were bits where synchronised outbursts of agonized howling from dogs all around. A few bats and pigeons literally tumbled out of the skies. Some of the lower range sweeps ended up making the whole building rumble, and Siddarth is pretty sure he saw the neighbouring building sway just a bit. When it was over, there was a ringing sensation in everyone's ears for about a week. The only person not affected in the team was Michael, who we suspect is immune to sound pollution.

The team has finally abandoned Quake III for good - at least for the time being. Regular readers would have probably seen Quake III mentioned here for nine years now, and the team has never stopped this tradition - till Rossi pulled out his rails last month that is. We have still not recovered, and we're still looking for someone to better Rossi at railing.



## SKOAR! Special



THE SKOAR  8.5

### BATTLEFIELD BAD COMPANY 2

**Developer:** EA DICE

**Publisher:** EA Games

**Platform:** PC, X-Box 360

**Price:** 999 (PC)

# We got Company Cap'n

Michael Browne

[michael.browne@thinkdigit.com](mailto:michael.browne@thinkdigit.com)

Ever since I played Battlefield 1943 and later Battlefield 2142, I wasn't a huge fan. Sure, the multiplayer action was good – vehicular combat is always nice, but overlarge maps meant you needed to have at least 16 players to make things fun. Bad Company 2 therefore, had more than big boots to fill. It had to make a believer out of me. Which meant a robust single player campaign, great gameplay (which was also lacking in its predecessors) and an involving multiplayer component. After playing offline for around 12 hours and two bursts of four hours each online, I'm happy to report that DICE did a good job – Bad Company 2 is just the opposite of its name and will keep you good company over a leisurely weekend and then some.


The engine is beautiful with a lot of physics and particle effects. Although the environs aren't as large scale and open-ended as any of the *S.T.A.L.K.E.R* games or *Crysis*, there is definitely a feeling of space, but not unnecessarily extra space, except where you need to travel by vehicle to reach waypoints scattered across a large map. Sunlight, HDR and bloom are a little overblown at times, though dappled shadows and reflections have been done well. Talking about

physics, environments meaning mostly buildings are destructible and this makes for a lot of eye-candy. Even firefights leave a lot of debris and smoke. Not only does this make for a beautiful viewing experience, it's also more realistic and makes tactical sense. A sniper in a watchtower can be taken out by shooting through the wooden planks, grenade the tower, thereby destroying it or waiting for him to pop up and sniping him with a headshot of your own. Water is done exceptionally well – as well as or even better than *Crysis* in my opinion. The sound component is really good – aural clues are a great help in combat and the sound component is spot on.

You'll play Marlowe and the deadly quartet of Sarge, Sweetwater, Haggard and yourself are back. The team is as verbose as ever and this keeps things in a lighter vein at times. The action is frenetic though, and enemies come in droves of anywhere between three and twenty – you'll need to put your most tactical foot forward. Advancing on an enemy position can be imposing. AI accuracy is eerily unerring and enemies have pretty much the same weaponry, meaning a couple of well-placed shots bring about your demise easily. You'll have an arsenal to choose from – assault rifles, machine guns, shotguns, sniper rifles, rocket launches – the number of collectable weapons is mind-boggling. Blood

and gore levels are a little weak, why be biased I say? You can destroy walls but your M60 cannot shoot off arms and legs – killjoy, literally. Vehicular combat is quite a treat, you'll bounce around in a Hummer, roll about in an M1 Abrams and fire hellcat missiles from a chopper. One of the irritants is your team simply refuses to finish some opponents off – it's annoying to find your team mate emptying six rounds into an opponent only to have him stagger and recover when one shot from you puts him down. Your squad is also nigh indestructible.

Multiplayer comprises of up to 24 players in a variety of scenarios like Rush, Conquest and Squad Deathmatch. Earning points allows you to unlock additional gear, some of which is class specific. Classes are soldier, engineer, medics and snipers.

Bad Company 2 isn't the system hog I expected it to be, but it requires a powerful machine to run it at high detail with goodies like AA enabled. It'll run on a GeForce 9600GT too, but you'll be missing out on a lot of eye-candy and essential elements like destructible environs will be minimised. If you have a GTX 260 or equivalent ATI card, you're covered. If you have a Core i7 with a dual GPU setup or a very high-end card – you'll be able to play the game in all its visual glory, and having tried this, I can tell you the investment is worth it. 



SKOAR! Special

# A level playing field

Bontago is a puzzle and real time strategy game which involves the placing of blocks on a circular playing area known as a "field". Gameplay involves smartly arranging blocks on the field. These blocks show up as the cursor, tetris style, and you have to scatter the blocks around the field to increase the area of your coverage. This area is a coloured overlay on the field, that shows how much of the field you have covered. The area extends a little beyond the blocks, and is calculated using three factors. The size of the blocks in the first factor, the proximity to other blocks is the second, and the height of stacks of blocks is the third. A player has to use a combination of scattering the blocks and building towers to win. The objective of the game

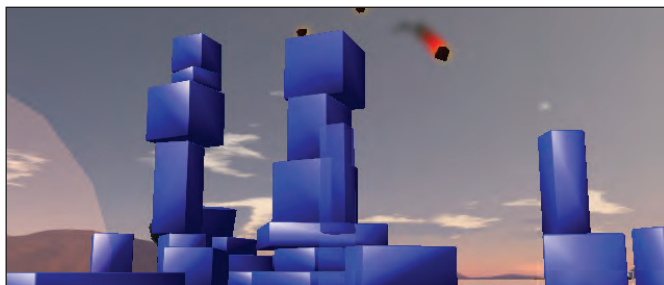


The red camp extending it's defences and almost capturing the flag

is to capture a flag by extending the area of the influence of your blocks before the enemy does.

The game is initially a little difficult to figure out, but once you get the hang of it, it can be pretty addictive and demanding. Each game is a fresh map, and there is no campaign. There is a very short and easy to master tutorial that explains the concepts of the game. Up to eight players can play at once in a multiplayer map, and when the gifts start coming down, the gameplay quickly snowballs into something pretty intense.

Bombs, rockets, anvils, propellers, jumping beans, volcanoes and the rare earthquake all disrupt the placing of the blocks. The volcanoes are particularly disruptive of getting rid of any tall towers that you might



Volcanic eruptions can destroy any towers you might have built

have created. Each game can last a maximum of ten minutes, which adds a sense of urgency to the game, although the gameplay itself is slow and gives you plenty of time to strategise and plan ahead.

Bontago is pretty well designed, and is immersive despite the very basic graphics. The practice mode lets you customise almost any aspect of the game, including the number of gifts, the flag count, the size of the field, the gravity, the timer and so on. The game is not meant for long hours of play, but is a fun aside if you need to take a break. **d**



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## SKOAR! Special

### GOD OF WAR 3

**Genre:** Action, Beat 'em Up

**Studio:** Monolith Studio

**Genre:** Action, Beat 'em Up

**Platforms:** PlayStation 3

**Price:** Rs 2,499

THE SKOAR

8.5

# GOD OF WAR

#### PROS:

- Technically the game works better than most games on the PlayStation 3
- Has grander version of everything you would expect from a game in this series
- Respectable replay value for a game in its genre

#### CONS:

- Unlike the series debut, the conclusion does not offer anything significantly fresh
- Can be perceived as a bit too violent and even depressing

## Crazy Kratos returns

Faiyaz Shaikh

[readersletter@thinkdigit.com](mailto:readersletter@thinkdigit.com)

**I**n the third and supposedly the final chapter, Kratos is a vengeful spirit with the single objective of destroying Mount Olympus and killing the king of Gods, Zeus. As one would imagine, the ensuing battle is spectacular, both in its scale and the destruction it causes. Just like God of War II, this game starts off with an epic battle and by the end of it Kratos is stripped of his powers and weapons. The central objective from this point is to recover the Flames of Olympus that are said to have the power to kill a God. Standing between Kratos and the Flames is a whole bevy of Olympian Gods and their minions.

God of War III is one of the most violent and gruesome games I have played since Manhunt. Even the violence depicted in the first two games pales in comparison to what you will experience in this game.

Accompanying Kratos in his bloody crusade is his trusty pair of Blades of Athena, now re-christened Blades of the Exile. Augmenting his destructive abilities are three other weapons and all four weapons also have magic abilities

attached to them. Familiar collectibles like the Gorgon Eyes and Phoenix Features make a return and once again they can be offered as sacrifice to increase Kratos's health, magic and item-power pool. Kratos can also recover other relics of Gods throughout the game; however these can only be used during subsequent play-through. These items give the player incredible bonuses and essentially they work like cheat codes.

The developers have added things to the series even though they maybe few and far in between. For instance, some of the QTE-based finishing moves are viewed from a first-person perspective. For most part, this game retains core-mechanics from the first two games. Kratos's primary blade has the familiar combos and all other weapons have similar keystrokes and effect. If things get really hairy, you can unleash magic contained within the weapons for some effective crowd control. Outside of combat it still about platforming, shifting pillars, smashing objects and pulling switches and chains to unlock the way forward.

It took me about seven hours to beat God of War III on normal difficulty setting. After beating the

game – true to God of War tradition – there is plenty of bonus content. The game unlocks bonus costume, the highest difficulty level, a challenge mode and lots of developer videos. All of the game's cinematic also become available in the video gallery. While you can pretty much get away with mindless button mashing throughout the game, the Challenge mode will require some skills to beat. After beating the Challenge Mode, the game unlocks the Combat Arena. We are not sure about the nature of this Combat Arena, but speculations on some of discussion boards indicate that this is where you can design your own challenges. Design to the extent that before the start of combat, the player will get to decide the type of enemy they will fight.

If you are expecting all that was God of War on PS2, but only at a much grander scale then you probably should not wait to get your copy of the game. The developers seem have been very careful about not messing too much with the game's core-mechanics, as new features are introduced only in small doses. God of War III is quite simply a relentless and epic bloodbath from the start, right till the credits start rolling. **d**

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## OS recoding

Microsoft kernel engineer claims the entire OS needs to be rewritten for better use of multicore processors

## Live Wave 4 leaked

Microsoft's upcoming Live Wave 4 suite cracked and leaked to torrent sites on the internet

# digit

## Crack The Code Winners

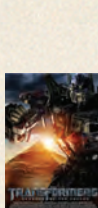
### Grand Winner

First to  
"Crack  
the Code"



**Mayank Verma**

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**Sravani Atmakuri**

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enrichment, entertain-  
ment, fun and learning

### GPU Winners



Best  
Caption



**Abhineet Mittal**

DIGIT, turning lives  
from Decimal to  
Hexaordinary...

**Divye Chhabra**

The spirit of  
g33kdom on  
papyrus

### DVD Winners



**Kumar Aditya**

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- My Technology Navigator



**Shweta Hepat**

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other	0	0%

### Maya vs. 3ds Max

[thinkdigit.com/forum/showthread.php?t=125202](http://thinkdigit.com/forum/showthread.php?t=125202)

**jayant\_raj7**

hey friends.....help me here...

Can anybody suggest which one is better?

Maya 2010 or 3ds max 2010? I searched autodesk.com but there was not much info there. Which one will be better for both game production and animated movie production?

**azaad\_shri75**

Maya was acquired from Alias who were its original developers - by the then known as Discreet (now Autodesk). If you want to learn, learn the basics and then decide which field suits you best. You can't develop

anything on your own, forget game development - which requires knowledge of game engine development - which in turn requires high end skill of C++ programming, one needs a studio running very high systems that too in grid - to develop some basic games-

**ajayashish**

Well i work in both 3d max and maya. Max works with Polygons and vertex points which is more lighter where as maya works with Nurbs which is heavy and smooth in finish. For gaming low polygon models are needed which can be achived in Max. I believe you

will be smart to judge now whcih one u need to learn...

In short... Max : more for architectural and poly modelling. Maya: Character and nurb modelling

**jayant\_raj7**

well ajay ..thanx fr helping here....do u use full version of maya n 3ds max??

**ajayashish**

Yes definately... i purchased MAX long time back so using older version and others are used for educational purpose

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## BIGGEST FAN CONTEST



Abhishek Kumar

We've found our biggest fan! He gets a Transformers and Iron Man DVD. Here's why he loves Digit so much...

- Because it gives me a lot of tech gyan.
- I have started using Open Source Software instead of Pirated Software
- Digit gives a lot of content with their DVD's. If you are not one of those who uses the internet everyday, believe me, you will love these DVD's a lot.
- Thanks to Digit, I have a collection of all the linux distros and I share them with my friends.
- Digit Changed me a lot!"



### READERS SURVEY

Dear readers,  
 thank you for your overwhelming response to our reader survey. It has helped us gain lot of insight on your preferences and will help us serve you better. Don't miss the next issue, we will be announcing the winners of this contest in May. Stay tuned...

- TeamDigit

**OpenSolaris [GEEK HUNT].WINNERS**

**digit**

MUMBAI

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Kurukshetra

**Second Prize:**  
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Ooty

**Third Prize:**  
Sriram Superman  
Chennai

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**2nd prize**  
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**3rd prize**  
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 The contest is only open to residents of India.

> logon to [www.thinkdigit.com/opensolaris](http://www.thinkdigit.com/opensolaris)



**Google.cn no more**

Google has shut down the Google.cn domain and start uncensoring posts, users are directed to [www.google.com.hk](http://www.google.com.hk)

**Tux goes red**

North Korea is busy developing a linux distro called Red Star

**April 2010**

Digit is taking interactivity to a new level, and will be organising events every month. You get to meet and interact with people that you wouldn't in the normal course of your life — industry experts, Team Digit, and other readers with similar interests. Stay updated and stay ahead of the curve by looking for this page in every month's magazine.

**1 Career Webinar****Analytics**

**APRIL 30**  
**TIME: 17:00 HRS**

Join Mr. Krishnan Venkata, MBA (IIM Lucknow), as he talks about understanding the nascent KPO industry, the immense potential it has, and how Analytics is going to be the "In" thing in the coming decade, similar to what IT and BPO were in the past. With over 8 years of experience in this field and currently with LatentView Analytics, he will throw light into what typical Analytics firms do, what are the kind of roles and functions there are, potential careers, and job prospects.

**2 Digit Webinar****Choose Your Webinar !**

**APRIL 17**  
**TIME: 17:00 HRS**

This time around we give you a chance to vote for which webinar you'd like us to conduct. Simply log on to our Facebook fan page ([facebook.com/thinkdigit](http://facebook.com/thinkdigit)) or our forums and vote for your favourite webinar.

A) **PC Tuneup:** Learn about defragmenting, cleaning, tweaking and optimising your PC to make it run smoother.

B) **Basics of 3ds max:** A brief introduction to 3d modelling in 3d studio max the user interface. Learn how to creating basic objects, create detail using polygon modelling, adding materials to the models, lighting your 3d scene and finally, the rendering. Be sure to get a trial version of 3ds max from Autodesk's site ([www.autodesk.com](http://www.autodesk.com))

C) **Photoshop:** We'll show you how to make a forum signature, a social networking avatar, and a set of approaches to make a sketch or tracing of yourself. Requests for any particular operation will also be entertained.

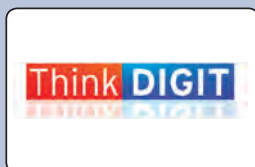
D) **Photoediting fun online:** Adding frames and objects to spice up photos of yourself and your friends. We'll also show you how to quickly make image macros and motivational to use on forums and social networking sites.

**To Vote via SMS send Digit WEB A/B/C/D to 567678**

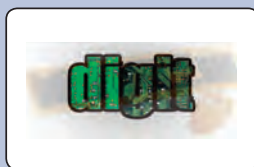
For details on upcoming webinars and to view past webinars, visit **[thinkdigit.com/webinars](http://thinkdigit.com/webinars)**



The digit logo contest on Facebook has now attracted more than three hundred entries, with new ones coming in constantly. Here are some of the latest ones. Think you can do better than these guys? Last twenty days remaining to prove it. Upload your entries to [facebook.com/thinkdigit](http://facebook.com/thinkdigit) and win exciting prizes. Contest ends April 20.



Angad



Ange Olivier Batienan



Keerthi



Manik



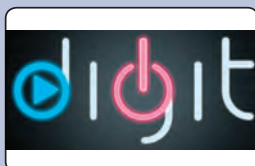
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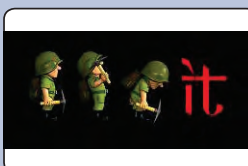
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Vineet S Chopdekar



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9/13 BAY

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SSD-BT-820

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With FM



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SSD-HP-202



SSD-HP-207



SSD-HP-212



SSD-HP-214  
(Neckphone)

## MOUSE



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PS2/USB  
SSD-OM-335

## CARD READER



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SSD-KB-807 (USB)

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# Tips to increase your battery life

## Laptop



- Change power settings for maximum battery life, instead of performance or a balanced setting
- Reduce the brightness of the display
- Charge the battery, use it up completely, and repeat the cycle for a longer battery life
- Minimise use of peripherals (USB memory, external mouse etc)
- Don't tax the machine, work on one application at a time, and regularly defragment
- Turn off the wireless and bluetooth services

## Camera



- Turn off the camera when not in use
- Don't browse or review many images at once, instead carry along extra memory
- If you have a viewfinder, don't use the LCD screen at all
- Use a lower resolution for taking images
- Don't store the batteries in the body of the camera, instead keep them separate
- Plan your shot well, before even turning on the camera
- Don't use the flash unless absolutely necessary, use another flash gun instead

## Mobile Phone



- Think of faster ways to navigate, eg: use recently called lists instead of the phonebook
- Minimise use of flash memory, save images on the internal memory itself
- Stop charging the phone when the batteries are full
- Turn off your mobile phone when you know you won't use it
- Decrease the brightness of the display
- Disable extras, such as Bluetooth, keypad sounds, vibrate alert along with a ringtone alert etc
- Use a low volume for alerts

## PMP



- Listen to music at the lowest audible volume, as a rule. This increases the life of your earphones as well.
- Turn off backlighting if possible, and reduce display brightness
- Use extra memory only if you absolutely need to. Try and listen to music from internal memory only
- Use short tracks, or files with smaller file sizes, which reduces load on the cache of the system
- Turn off album art display and the equaliser
- Keep the firmware updated regularly

## India on the forefront of FOSS

A quick peek into Google Trends shows that India is right on top when it comes to Open Source, and Linux interest. If you are skeptical about adopting Linux, fear not as you have a lot of local company. Indian users are most interested in the Ubuntu distribution, the DVD version of which has language packs for many native Indian languages. This bridges a large language gap in technology adoption, and is one of the strong points of Open Source software when compared with their commercial alternatives.

The graphs below plot the relative interest in Linux across regions in the world, states in India and cities in India. These rankings keep changing, a little time ago, Kashmir was on top of the subregions list, but has dropped off the list recently.

(FOSS stands Free and open source software)

## Spice up your presentations

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- **Templates:** get your hands on some professional templates at [www.templateswise.com](http://www.templateswise.com)
- **Clip Art:** add some animated magic, from the .gif section at [www.coolarchive.com](http://www.coolarchive.com)
- **Sound FC:** Add funny effects such as laughter and comic sounds, just look for the sound you need at [www.findsounds.com](http://www.findsounds.com)

Regions	Subregions	Cities
1. <a href="#">India</a>	1. <a href="#">Karnataka</a> , India	1. <a href="#">Bangalore</a> , India
2. <a href="#">Russian Federation</a>	2. <a href="#">Uttar Pradesh</a> , India	2. <a href="#">Noida</a> , India
3. <a href="#">Czech Republic</a>	3. <a href="#">Kerala</a> , India	3. <a href="#">Pune</a> , India
4. <a href="#">Indonesia</a>	4. <a href="#">Rajasthan</a> , India	4. <a href="#">Trivandrum</a> , India
5. <a href="#">Taiwan</a>	5. <a href="#">Andhra Pradesh</a> , India	5. <a href="#">Hyderabad</a> , India
6. <a href="#">Japan</a>	6. <a href="#">Tamil Nadu</a> , India	6. <a href="#">Ahmedabad</a> , India
7. <a href="#">Germany</a>	7. <a href="#">West Bengal</a> , India	7. <a href="#">Chennai</a> , India
8. <a href="#">Norway</a>	8. <a href="#">Punjab</a> , India	8. <a href="#">Calcutta</a> , India
9. <a href="#">China</a>	9. <a href="#">Maharashtra</a> , India	9. <a href="#">New Delhi</a> , India
10. <a href="#">Finland</a>	10. <a href="#">Gujarat</a> , India	10. <a href="#">Mumbai</a> , India

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