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Matters of momentum

When we think of technology innovations, the few examples that come to mind instantly are those that have solved a longstanding problem. The car for example solved the problem of rapid personal transport, the laptop allowed us all to compute on the go, and the internet (apart from making us worship cats) forever changed how we live.

Even at a product level there were innovations that made things incrementally better. Apple didn't invent the touchscreen smartphone or the portable music player, but what it did was make those devices genuinely practical by solving many of the little problems that had plagued previous attempts – battery life, storage space, touch response, etc. There are many more examples like this, but space is a constraint here.

Technology, I believe, should solve a problem, fulfill a burning need, or make a user's life infinitely simpler. When designing a new product these principles should ideally be common sense. Thus, to make something that doesn't fulfil any of those elementary principles is a recipe for disaster, right? Surprisingly, the answer is both yes and no.

I was at an NVIDIA conference in Canada recently, where they announced a solution to graphical tearing and stutter – problems that have bothered us gamers since the dawn of computer graphics. This new technology got me making a mental list of all the other innovations in recent years that were built from the ground up to solve such problems. Turns out there aren't as many as we'd like to believe, and most were created simply because they could be.

Take Windows 8, for example; what real problems did we have with Windows 7 that it fixed? What need did the Surface RT meet? Honestly it seems to me like someone at Redmond just wanted to do something in the tablet space and decided to bootstrap Windows with a touchscreen to try and get in on the tablets action.

I'm not on a Microsoft witch hunt here. Even NVIDIA, whom I just applauded for one elegant solution, has something that just doesn't make sense. Look at SHIELD; why would you ever want to stream a PC game that's running in all its glory on a PC monitor to a portable small screen with a controller? It never made sense to me from the word go. Technology companies seem to be obsessed with being creative and innovating for the sake of innovation – building solutions for

problems that don't exist. Recently, they added a use case scenario that made a little more sense – stream your PC game to your large TV in another room using SHIELD.

Another example of possible success despite a lack of need: Steam OS. I had a chance to meet John Carmack in Canada and he said that when Valve approached him years ago asking for DOOM to be locked for distribution to Steam he thought they were crazy. "But look at Steam now!" he quickly added to those present. Even with Steam OS, he sounded skeptical about everything shifting ground up to a new platform (Linux), but as he said, "It's Valve. Years later we can look back at them as being prophetic, and it's purely because it's Valve I won't call them crazy this time." The sheer momentum that Steam has gathered as a platform might just be enough to propel Steam OS into success.

This momentum is the aberration to the rule of technologies and products that make sense. Take the iPad for example. When Apple launched it, it literally birthed an entirely new industry, despite the need for a "tablet" not being the strongest at the time. Even today, there are billions living their lives just fine without one, but if you happen to get one, all of a sudden you cannot imagine ever being without it. The Apple juggernaut made sure devs were churning out apps for it from Day 1. Can we really have an Apple product that flops anymore?

Most companies are hoping that the smart-watch will become what smartphones and tablets are today. I have serious doubts, because again this seems like a desperate attempt at innovation for the sake of it, and not really filling a need.

We don't need these incremental innovations, or duct-taped solutions. What we need are built from the ground-up new technologies – a newer and better interface than touch, radically new and efficient sources of portable power; we need today's equivalent of the car, the internet, the wheel and sliced bread, and the company that does it first will see all the world's momentum go with it – and our money too! 🍷



Siddharth Parwatay
Features Editor

siddharth.parwatay@thinkdigit.com

“Technology companies seem to be obsessed with being creative and innovating for the sake of innovation – building solutions for problems that don't exist.”

A handwritten signature in black ink, appearing to read 'Siddharth Parwatay'.

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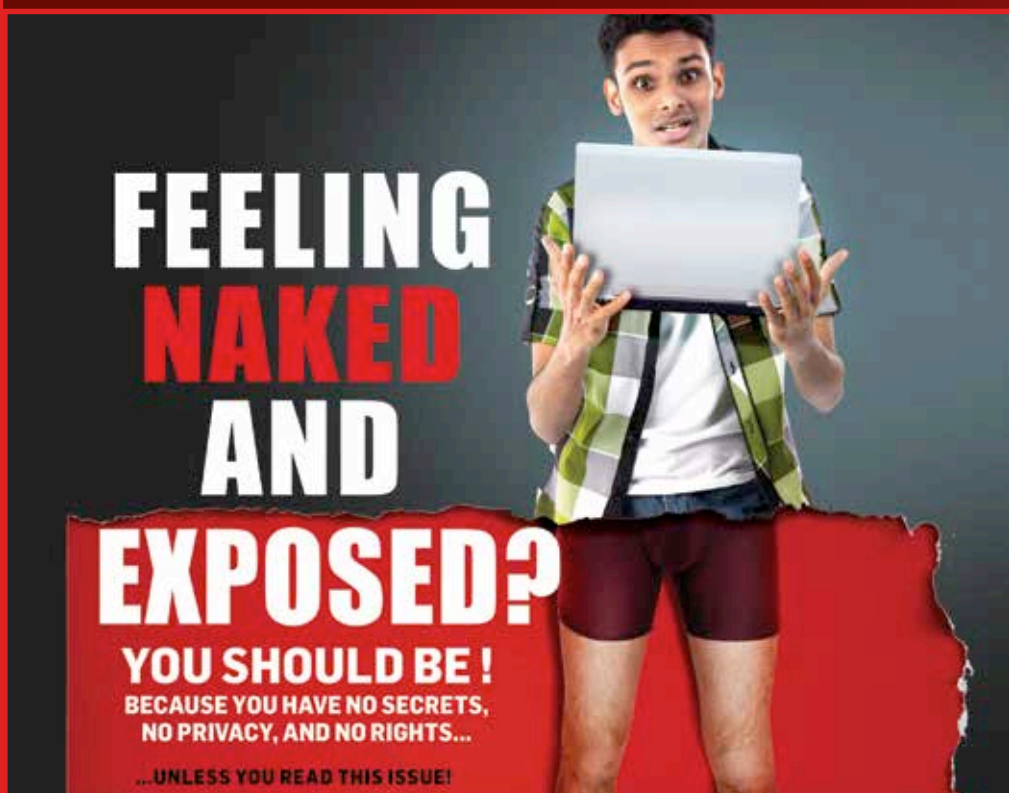
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Published, Printed and Owned by Nine Dot Nine Interactive Pvt. Ltd. Published and printed on their behalf by Kanak Ghosh. Published at Bunglow No. 725 Sector - 1, Shirvane, Nerul, Navi Mumbai. 400706. Printed at Print House (India) Pvt. Ltd. R-847, TTC Industrial Area, MIDC, Rable, Navi Mumbai 400701. Editor: Anuradha Das Mathur

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- Ashampoo anti-virus
- ASUS RP-N53 Range Extender
- ASUS WiFi AC Adapter USB-AC53
- BlackBerry 9720
- Cooler Master 690 III
- HP Slate 21
- Kaspersky Internet Security 2014
- LG G2
- Logitech UE900
- Rapoo 3920p
- Ricoh GR
- SanDisk Extreme II 240GB
- Sony Xperia Z1
- Toshiba Q series 128GB
- TP-LINK TL-WN823N Wireless N USB Adapter
- WD Black 4TB WD4001FAEX
- Zebtronics Gladiator
- Zebtronics Tabmate

Routers

- ASUS RT-AC68U
- ASUS RT-N10E
- ASUS RT-N12HP
- Belkin AC1200DB
- Belkin N600DB
- D-Link DIR-810L
- D-Link DIR-868L
- Digisol DG-BG4100N
- Digisol DG-BR4000N/E
- Digisol DG-BR4313NG
- Edimax BR-6478AC
- Netgear JNR1010
- Netgear JNR3210
- TP-LINK TD-W8968
- TP-LINK TL-WDR3600
- TP-LINK TL-WDR4300
- TP-LINK TL-WR720N
- Trendnet TEW-811DRU
- Trendnet TEW-812DRU

AIOs

- Dell Inspiron One 2020
- HP 18-1106in
- HP Pavilion 21-a255in
- HP Pavilion TouchSmart 23-f201in
- HP ENVY 23-d200in TouchSmart
- HP ENVY Rove 20
- Lenovo IdeaCentre C340
- Lenovo IdeaCentre C440
- Lenovo IdeaCentre B540
- Lenovo IdeaCentre A730
- Lenovo IdeaCentre Horizon

Camera Phones

- Apple iPhone 5
- HTC One Dual
- LG G2
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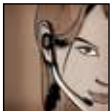
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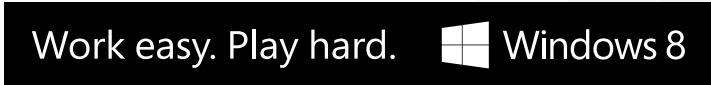
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**Cartooned Pop Culture**

Joey Spiotto aka JoeBot seems to be rather good at making cartooned book covers based on pop culture themes. Take a look: <http://dgit.in/1be0S7N>

☒ Hello Team Digit, this is my first ever letter to you. You said on the cover "360 reasons to pick up this issue" and I must say that there are not only 360, but thousands of reasons to pick up last month's issue. The cover is really festive. I've never seen anything like that before. I'm very happy about the advertisements for new desktop PCs, laptop, phones, etc. Now I have better knowledge of new iPhones, Galaxies, Xperias and BlackBerrys.

The cover story, "the 50 mistakes" was really very useful/true, and it helped to grow my knowledge. The "30 gadgets to buy this Diwali" feature gave me even more knowledge of the newest gadgets but the "online shopping" story was pointless. Your product reviews are really good, and Dgt and the DVDs are very useful.

I have a suggestion for you: why don't you add a price list of new products such as processors, motherboards, GPUs, storage drives etc. in Digit.

And finally the package of the October issue was extremely gorgeous. I'll give 5+ out of 5 stars to your magazine. My English isn't very good, so please don't mind the errors in my letter.

By the way, my T-shirt size is normal. I'll be glad to wear a Digit T-shirt (just kidding).

–NK Kalita

☒ Ah we seem to have another letter dropping a not-so-subtle hint about the digit t-shirt. Well, you'll have to try harder :-). But thank you so much for the feedback. We do try to put up-to-date price lists in our "Price Watch" section every month, but we can't possibly stick to only PC components. We have to try to cover other categories as well. Do keep writing in.

–Siddharth

☒ Hello, this is my first mail to you. I am a 13-year-old guy. I've always loved to know about new technology, software, gadgets etc. I bought the first Digit magazine at a bookstand and consequently subscribed to it. You guys are really fabulous.

I like your cover stories and articles which have many times been useful. I know how you added the Digit IO1 section to suit the needs of new readers. When my friends ask me anything about gadgets I

Feedback for the October 2013 issue of Digit

can answer them easily only because of Digit magazine.

I also recommend them to buy Digit as it is India's best technology magazine. I like your software in the CDs. Since I like developing apps, software and web pages could you please add more information, software and tutorials in CDs focusing on developing. I like your FastTrack booklets and also read the devworx section.

All your magazines are essential in keeping me updated about the tech world. Please continue and keep up the good work.

–Anirudha Gorad

☒ Thank you for your kind words Anirudha. We'll surely have more dev content on the DVDs in the coming issues. Knowing your taste I'm sure you'll like our FastTrack this month. We've covered developing for Firefox. Also, do check out the devworx pages for tips on securing your website and our interview with whacky and talented Javascript wizard, Sunil Pai.

–Siddharth

☒ Hi Siddharth, just read your column. Looks like you've taken the Introduction to Psychology course on Coursera ;) (It was a great course by the way). I haven't been following Digit religiously over the past two years because my MBA course

takes up a lot of time (I was a fan boy before). It was good to see a computer geek talk about psychology! We computer geeks are often falsely perceived to be a bit robotic when it comes to emotions but with you (and me) interested in psychology, it seems that we're evolving :D Team Digit is doing a great job! Best of luck for all future editions!

–Abhishek Kumar

☒ Thanks for the vote of confidence Abhishek. I got a notification about the course some time ago but no, I didn't end up taking the course. Much of what I was talking about in the column was from this book I read recently titled "You Are Not So Smart". It's a revelatory read and I'd recommend it to anyone even remotely interested in psychology. And you are right about us evolving. Geeks shall definitely inherit the earth :-)

–Siddharth

☒ Happy Diwali to you, Team Digit. It's an awesome experience to open this enchanting magazine in the first week of the month.

The October issue really deserved to be a collectible – not just for the current generation but for the coming generation also. You made a mistake on the cover page when you said "360 Reasons to Pick

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Tom Clancy passes away

On October 1st, spy thriller author Tom Clancy, passed away at the age of 66. <http://dgit.in/16yLjH>

Self-assembling robots

This bunch of small brightly coloured magnetic cubes can spin, somersault and snap together to create all kinds of modular shapes. <http://dgit.in/1flbDdW>

LETTER OF THE MONTH

Dear Team Digit, first and foremost, hats off to the entire team for improving the delivery service to subscribers and bringing it up to blazing speed. Whether India gets 5G or not in the near future, you guys definitely provide 10G in terms of speed of delivery. I remember some few years back there were delays, especially with the Special edition. But you guys have improved in this area, which is quite a milestone in itself. I'm quite sure the delivery guy has special connections with Rajnikant ;)

Keep up the good work.

Coming to the issue, the editorial is just awe-inspiring and very close to my way of thinking.

The way Siddharth has written the editorial, I won't be surprised when he becomes a regular part of the editorial team. The complete layout of the magazine and the passion of each team member is evident in every single word.

It's evident from each of your issues that you guys sweat it out to be the best in the world and wave your magic wand on readers each time. The advertisements in the magazine are also well balanced, neither too much nor too less, which is quite a feat by itself. I just love the World View section from Day One of its origin. Please keep it alive for a decade or so :P

Just a few suggestions from my side:

- 1) How about interviewing inspirational and motivational personalities and ask them about their use of technology for maximum output and similar stuff.
- 2) Include a game or movie poster in some of the issue (as many readers have already demanded). It can be sponsored and another source of revenue for the magazine.
- 3) Kindly do a Fast Track on Troubleshooting your Smart Gadgets 3.0. (mobile, tablet, laptops, etc.)

PS: In case you're wondering who this fan boy of Digit is, I'm a Software Engineer with an athletic physique and buddies call me Abhishek Bachhan.

—Abhishek Kapoor



TMI on the physical attributes but hey, nice to have you on board! Thanks for all the kind words and those three suggestions you've given are bang on. We'd like to implement each one of them and we're already working on them. With readers like you for support another decade should be a piece of cake. Do keep writing in and enjoy the t-shirt you get for letter of the month. Hopefully your athletic physique will make it a perfect fit :-)

—Siddharth

Up This Issue". It should be "36,000 Reasons..." This is because if a person who's really passionate about technology goes through a specification, he'll also find the related and fundamental ideas about that product or technology, and that's why the Oct 2013 issue was done perfectly. It also discredits salesmen and companies' strategies to fool their desperate customers who hide most naturally occurring factors in daily life.

Although a day before reading the magazine I bought a new smartphone, the reviews of smartphones are always pleasing. It's always interesting

to know what Team Digit thinks about the products and its practical factors from the users' point of view. The editorial about biased customers is enlightening and the advice helps buyers think before they act. I always support trying new products, no matters what the company profile.

Although I believe in the phrase "Silence matters more than words" and it took me about 7-8 years of being a regular reader of Digit since I was in 9th standard, this is my first response to you as I couldn't hold back any more.

—Gyanendra Tiwari

Thanks for your kind words Gyanendra. You've managed to put smiles on all our faces. Just don't wait another eight years to write to us next time :-)

—Siddharth

I've been reading this mag for four years now (not regularly though) and this is my first letter to you. Firstly, I'd like to thank you for your fabulous work. I've learnt many things from your issues but it's the Fast Tracks that I enjoy the most. The reason I mentioned that I'm not a regular reader is because I pick up the issue based on the FastTrack content.

I have a few more things to ask of my favourite magazine. Why don't you provide TED videos regularly? Why don't you provide open-ware courses? Please provide an FT on advanced programming (not basic data structure like those available in most advanced programming books), it will be much appreciated.

Please add a devworx on software design using a combination of languages. I downloaded the source code of a few open source software the other day and it had some C files, some Flash and some XML. How did they all work together?

Also, provide a column on migrating from Windows 7 to 8 with reasons as to why many features that worked fine on Windows 7 have problems with Windows 8 (like creating ad-hoc networks, installing Visual Studio 2008, .Net before 4.0 etc.) Finally, change the UI of your DVD (the previous one with a Start menu was more interesting than the present one. Do you have a name for that?) and please add a PDF mentioning the list of software and resources available in the particular DVD (like many have said before). Thank you for your work and don't you ever dare stop publishing this magazine!

—Amrutansu Garanaik

Thanks for the mail. We're glad that you're really enjoying the content we work so hard to create. Thank you. Digit is ever evolving and your suggestions are interesting. Don't be surprised if you start seeing some of your suggestions being implemented over the coming months. Do write to us again.

—Anirudh



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Computer vs Free Will

Free Will: Quantified. Is it possible? Or is it just another discussion on Agnostic Metaphysics?
<http://dgit.in/H7Yzuo>



Manhole Gas Station

Out of gas? Pull up on that manhole. Quite like the Weapon/Armour pads in Death Race
<http://dgit.in/H7Z07R>

Bring in the New

Everyday, technology around the globe seems to be moving in a whole new direction. Here's a look at some of the stuff that we're looking forward to.

Google launches Chromebook laptops in India

Google will launch the Acer C720 and the HP Chromebooks in India on October 17. Google claims that Chromebooks are faster than a traditional PC and offer longer battery life. The Chromebooks will come preloaded with Google services such as Gmail, YouTube and Google+ users get access to apps from the Chrome Web Store.



Google Chromebook

The Acer C720 Chromebook sports an 11.6-inch display with 1366 × 768 pixels resolution and comes with a 16GB SSD. The C720 Chromebook has a VGA camera and microphone for video chatting. It supports WiFi, USB 3.0 and another USB 2.0 port for connectivity. The Acer C720 runs on the Intel Celeron 2955U processor and offers 8.5 hours of battery life, according to the company.

The HP Chromebook 14 sports a 14-inch display at 1366 × 768 pixels. It has a 32GB SSD, a 720p camera and a 3-in-1 card reader. Connectivity wise the HP Chromebook offers Wi-Fi, two USB 3.0 ports and another USB 2.0 port. It runs on an Intel Celeron 2955U processor and claims

to deliver 9.5 hours of battery life. The Acer C720 Chromebook and the HP Chromebook 14 come with 100GB of free Google Drive storage for two years. Google has also partnered with Tikona and Airtel to provide a range of cellular and broadband offers for Indian consumers.

The Acer C720 Chromebook is available for ₹22,999 and the HP Chromebook 14 for ₹26,990. The devices will be launched on Oct 17 and be available from select Reliance Digital and Croma stores in Delhi and Mumbai. Users can also pre-order the Chromebooks from flipkart.com.

A Google spokesperson said: "Chromebooks are a new type of computer from Google designed to help you get things done faster and easier. They run Chrome OS, an operating system that has multiple layers of security, cloud storage, and the most popular Google products built-in. Basically, if you love using Chrome on your PC, you'll get going on a Chromebook in seconds."

Tata Sky introduces Everywhere TV live streaming app for iOS and Android

Tata Sky has introduced a new app called 'Everywhere TV' that allows users to access TV channels and on-demand movies on the go. The new application will be rolled out to both Android and iOS platforms soon. Tata Sky will be charging ₹60 per month



from its existing customers for the service.

Tata Sky's Everywhere TV will initially feature most of the popular Hindi and English channels, regional channels will be added soon.

"The idea is to let our subscribers watch TV while they are travelling or when they are out of home. All that they need is a good 3G mobile connection or Wi-Fi connectivity," says Tata Sky Chief Commercial Officer Vikram Mehra.

Tata Sky hopes the new service will help expand the brand further and keep up with changing customers demands.

"We started the 'à la carte' option to let customers choose what channels they want to watch, we introduced the recording option so that they can watch programmes later. Now, our next step is to let them watch live TV while on the move via mobiles," Mehra added.

According to Mr Mehra, Tata Sky's research showed its subscribers spent about 76 minutes on commuting every day. "Most of the people travelling in train or by car watch some kind of video content on their phone. This shows that there is a huge

potential for Everywhere TV," he said.

"In the next three months, we will double the number of channels on offer on the 'Everywhere TV'," he said, adding the future plan was to get over 200 channels on it.

Nokia to announce laptop?

At the time of writing, Nokia is gearing up for some major announcements at its October 22 Nokia World event slated to be held in Abu Dhabi. The company has just released a teaser image of the event that suggests the unveiling of a phablet, tablet and laptop.

The new teaser image, however, has fuelled rumours about the alleged Lumia 1520



Nokia unveiling a laptop?

phablet and Lumia 2520 tablet. According to rumours, Nokia's forthcoming phablet sports a 6.0-inch 1080p display and is powered by a Snapdragon 800 chipset. The device also has a 20MP PureView camera sensor with a 6-element optically stabilized lens along with LED flash. The built-in storage is tipped to be 32GB, with no option of expanding the storage.

The Nokia Lumia 2520 tablet is expected to be along the lines of Windows RT tablets, and will come with a kickstand on its back. The tablet is likely



e = minecraft square

Minecraft goes Quantum Physics. Just when you thought it couldn't get bigger on the inside. Check out the link for details <http://digit.in/H83o6S>

to come with a full HD display. Details about the Nokia laptop are scarce. However, the teaser image confirms an imminent release of the device.

Angry Birds Go! Kart racing game coming this year

Finnish developers' Rovio has announced plans for its next installment in the Angry Birds saga called 'Angry Birds Go!', slated for a December 11 release. The next avatar for the Angry Birds franchise is a high tempo downhill racing game, featuring upgradable karts, loads of characters with their own set of unique skills and a fully rendered 3D world.

Hasbro's telepads are also included in Angry Birds Go!, which means that you have the ability to teleport your favourite carts into the game. Rovio has built Angry Birds Go! entirely from scratch as a free to play title, with revenues generated entirely through in app purchases and advertising. The game is slated for a December 11 launch for iOS, Android, Windows Phone 8 and BlackBerry 10 devices, making it the biggest cross-platform launch yet for the franchise.

Nonetheless, December 11 seems so very far off. "December 11 is just the beginning. We have huge plans for our first ever racing game and we can't wait to see what you guys think", adds Rovio.

Real Steel: World Robot Boxing launched as free to play download

Reliance Games has officially announced the launch of Real Steel: World Boxing on iOS and Android as a free to play download today. The game is inspired by 2011 DreamWorks

film, Real Steel, and is built upon by the foundations laid down by its predecessor. The game features better graphics, new robots, more gameplay modes and head-to-head multiplayer.

Real Steel: World Boxing has 24 bots in total including the likes of Zeus, Atom and Twin Cities, including eight new contenders, ten brand new arenas and four diverse gameplay modes (Championship, Time Attack, Daily Exhibition and Free Sparring).

To add to it, the game has new special moves and cinematic Rip-Offs along with new social features and live multiplayer over WiFi. It also supports Game Center Achievements and leaderboards. Players can also customize their robots with decals, various upgrades and power-ups.

The game can be downloaded for free at the App Store and Google Play Store for iOS and Android.

Xbox 360 bundles for the festive season

With the festive season raining amazing offers and discounts upon us, Microsoft too has jumped on the bandwagon to offer some incredible deals with respect to the Xbox 360. We spoke to Anshu Mor, Business Group Lead - Interactive Entertainment Business, Microsoft India, who essentially takes care of everything Xbox 360 related in India. He let us in on all the deals that the company will be offering to those buying a new console this festive season.

The first deal is on the Xbox 360 Kinect (4GB) bundle, which comes with a copy of Kinect Adventures in the box. However, to sweeten the deal Microsoft will be offering two unique SKUs. One SKU will include the 4GB Xbox 360 along with a

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Drones Away!

Ready, Set, Launch. Here's an article about the things you should know before getting your own drone. <http://dgit.in/1aDRtEY>



Hello, Siri!

Meet Siri: The Majel Barrett of the 21st Century. Somebody call Kutherapali! <http://dgit.in/1a30BEp>

Kinect sensor and while Kinect Adventures will come standard, Microsoft will also throw in two additional games; Fruit Ninja and Forza. The other SKU will also include Kinect Adventures, but the other two games would be Disney Adventures and Your Shape Fitness Evolved. The goodies don't stop there though. We are told that (the bundles might take a few days to percolate to every store), each of these SKUs will also come bundled with FIFA 2014 come October 12th.

The second offer will be available on the 250GB variant of the console. The Xbox 360 250GB Core Bundle (without Kinect) will come with a copy of Darksiders 2 in the box and download tokens for Batman Arkham City, Halo 3 and Gears

essentially comes down to the same thing as anyone who buys a new console would want to pick up a few games to start off with. The bundled games help save on that cost, which can be anywhere between ₹3,000 to ₹7,000.

Windows 8.1 now available, brings many new features to the table

Microsoft Windows 8 gets a new lease of life, with the Windows 8.1 update that went live on October 22nd across Microsoft servers. The update should show up in the Windows Marketplace and if it doesn't, we suggest some patience as the rollout is happening sequentially.

Windows 8.1, just like Windows 8, is a fresh departure from

soft dished out was updates that fixed things in the "back", Windows 8.1 brings a lot of new things you can actually see.

We've been using Windows 8.1 from the day the Preview Build was released, and while it was somewhat buggy (especially the search), it seems that Microsoft has ironed out many of these gaping issues. In case you're wondering what exactly is new, well, here are five new features of the update that we feel you might like instantly.

Read more here: <http://dgit.in/H6dyFw>

Watch Dogs, The Crew and DriveClub delayed until 2014

Ubisoft has officially announced that the release of two of its highly anticipated titles – Watch Dogs and The Crew have been delayed. Both titles were slated for a current fiscal year release (ending on March 31, 2014), but now the release has been postponed to the next fiscal year instead.

In a conference call, Ubisoft said that the tentative release date for Watch Dogs will be in the first quarter of the following fiscal year (between April 1 and June 30, 2014). The Crew will be released in the second quarter (between July 1 and September 30, 2014).

The launch has been postponed so that Ubisoft can give the games a final revamp so as to fine tune every aspect. The delay affects all platforms of the game, so for once, PC gamers will not feel left out from their console counterparts.

Several sites reported that the launch of DriveClub, one of the launch titles for Sony's next-gen consoles, has been pushed back to Spring 2014. DriveClub was one of the launch titles for the PS4, and Sony's official

DriveClub page still lists Nov 15, 2013 as the launch date. However, according to Kokatu and The Same Coin, the delay is inevitable.

According to Kokatu, "To add some fuel to this rumor fire, today in San Francisco, Sony is holding an event to show off their PS4 games. Although DriveClub was originally part of the lineup, a Sony rep told me this afternoon that it has been removed due to a "scheduling conflict."

Super Mario Bros now playable in your browser

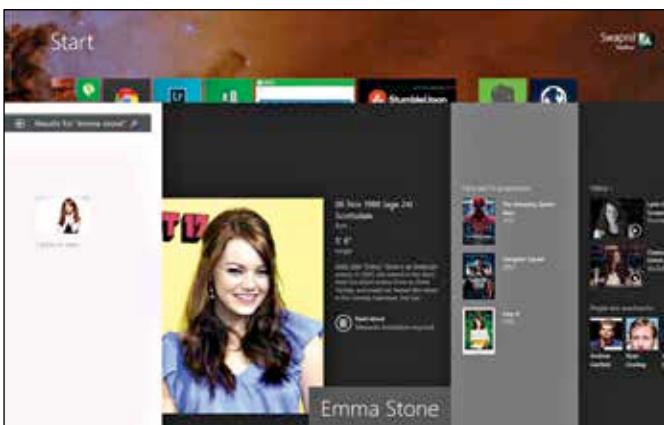
Super Mario Bros is now playable on your web browser as Full Screen Mario has adapted the game from its 80's Nintendo console roots to HTML 5.

The site has been created by Joshua Kevin Goldberg, pursuing his majors in Computer Science. Users can play the original levels via the keyboard arrow keys or create custom maps using a level editor. The game's authenticity is maintained as this version retains the same music and animation from the old school version.

"The whole project is open source and free - if you would like to use the code for anything, email me", says Goldberg. However, as of now the HTML version of Mario is only compatible with Google Chrome. Support for other browsers may be added very soon. So what are you waiting for? go on, pounce on a few mushrooms! Visit the URL to start playing: www.fullscreenmario.com

Sony announces the A7 and A7R full frame mirrorless cameras, the RX10 and 5 new lenses

Sony dropped the mother of all bombs on the world of photog-



Windows 8.1 - Its predecessor revamped

of War 3. In case you're wondering, these are all full games. The second variant, the Xbox 360 250GB Kinect bundle will come with Kinect Adventures, Kinect Sports 1, Dance Central and Minecraft.

When we asked why Microsoft was not offering discounted prices on their bundles this season, Anshu Mor said that due to the fluctuations in the dollar price, it has become difficult to offer discounted prices. However, bundling games

what we have come to think and see of Microsoft Windows. Windows 8 in of itself was radically different in terms of user interface and user experience, but Microsoft takes it up a notch with this new update, which is less "service pack" and more of a powerful boost of features. Windows 8.1 is a downloadable update that add a host of new features to the operating system, something that's a long departure from the updates we've seen in the past. Earlier, all Micro-

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Memory Lane

Gamers, take a long walk down Playstation Memory Lane at the other end of this link: <http://dgit.in/PSMemLane>



Libraries - Our Future

Neil Gaiman, master of sci-fi-fantasy talks about the future of the human race <http://dgit.in/heimangaiman>

raphy AND mirrorless cameras. We recently saw the announcement of two full-frame, mirrorless cameras and five new lenses designed for them. If that wasn't enough to make you jump out of your seat, Sony's also added an incredibly powerful superzoom camera to its lineup.

First off, the Sony A7 and A7R, the two new mirrorless cameras from the company with full frame sensors. It was long rumoured that Sony would be coming out with a full frame mirrorless camera (with the VG900, a full frame video camera which came with the E-mount used on the mirrorless cameras). The A7 and A7R break away from the usual design we've seen on Sony's mirrorless cameras, and instead, goes the route of the RX1. Each camera is equipped with advanced imaging features including a powerful new BIONZ X processor; fast AF capabilities; a clear, bright XGA OLED Tru-finder, full HD 60p video recording, Wi-Fi and NFC, dust-and moisture-resistance and more.

In case you're wondering what the difference between the two cameras is, the Sony A7 is a full frame mirrorless with a 24 megapixel resolution with a fast Hybrid AF while the A7R sports a 36 megapixel resolution and no optical low pass filter.

To compliment these new cameras, Sony's also announced five new lenses, three of which carry the high-end Carl Zeiss branding with the other two



Sony A7

being Sony G lenses. The model most photographers would be interested in would be the Carl Zeiss Vario-Tessar T* 24-70mm f/4 ZA OSS, offering the ideal walkaround focal length. If zoom lenses aren't your thing and purism runs in your veins, then there are the Carl Zeiss Sonnar T* 35mm f/2.8 and the Carl Zeiss Sonnar T* 55mm f/1.8 Lens Since the Zeiss lenses tend to carry a hefty price tag, Sony's also introduced a kit lens, the Sony 28-70mm f/3.5 - 5.6 OSS which would ship with the Sony A7 as an optional kit. Finally, there is the G 70-200mm f/4 lens which is ideal for photographers who love reach There is no official India date or release price as yet. Read more at: <http://dgit.in/19MoWw4>

NVIDIA announces GameStream, G-Sync, ShadowPlay and the GTX 780 Ti

Day two of the NVIDIA Editor's Day in Montreal began with a bang and a slew of announcements that promise to radically change the way we are going to experience games in the near future. Here's our roundup of what was announced, how everything works and how it's going to affect you.

Gamestream

The new technology announced is sort of like NVIDIA's Airplay

- something that even Jen Hsun alluded to in his presentation. Of all the platforms, PC gaming has always been the farthest from the living room TV and the powers that be (not just NVIDIA) seem to be making a lot of effort to change that. With NVIDIA's Gamestream you will be able to stream games to your large screen TV from a number of sources including your PC. Of course streaming Android games from the SHIELD is an option and going by the slide below it seems streaming from GRID will also be an option too (possibly in the near future).



Jen Hsun and the GTX 780 Ti "This is a good time to be a PC gamer"

G-Sync

The pièce de résistance of the entire two day event was G-Sync - a technology that has been in the making for a number of years and is now finally out. To understand what it is and what it does we first need to acquaint ourselves with the three most dreaded problems that a gamer faces. Stutter, Lag and Tearing have been the bane of computer gaming for years. Paraphrasing here, Jen Hsun even went on to say they are to gamers what hemorrhoids are for regular folk.

NVIDIA comes in with G-Sync, with which the GPU will be able to drive monitor

timing. This needs a hardware level handshake between the monitor and GPU which comes via a module that G-Sync compliant monitors will have embedded in them. The monitor now will not update until the frame is done drawing. So in other words variable refresh rates.

Shadowplay

Shadowplay is NVIDIA's hardware accelerated game video capture technology and has been in the drawing board stage for quite some time now. It's finally out now and will enable gamers to capture

gameplay in full HD without taxing the system as heavily as the purely software based capture solutions out there. Shadowplay will also enable another interesting feature by leveraging Kepler.

GTX 780 Ti

Unfortunately apart from showing off what the card looks like, NVIDIA had no further details to disclose about the GTX 780 Ti in terms of specifications. But hey it's bound to be powerful! Echoing Jen Hsun's words "this is a good time to be a PC gamer". Read more at: <http://dgit.in/nvmonreal2>



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Web Watch

The web is changing as we speak. Read out to explore the latest developments triggered by other advancements in this space

App Watch

Get ready to rock these navigation apps. Also, don't miss the dedicated Dish TV app for Live TV on your mobile devices

A future-friendly present

The month sprang quite a few pleasant surprises. Read on...

Nexus 5 makes a brief appearance on the Google Play Store for ₹21,000

The Nexus 5 appeared briefly on the Google Play store in October. The listing seemed to be an error since the smartphone could not be purchased. The price for the 16GB variant of the Nexus 5 was listed at ₹21,456 (\$349).

Codenamed Hammerhead, the smartphone was no longer visible on the Google Play store a few hours later. Its tagline "Capture the everyday and the epic in fresh new ways" leads us to believe that the camera will be one of the USPs of the Nexus 5.

Twitteratti hinted that the Nexus 5 would be unveiled on October 28. Leaks regarding the Nexus 5 have been making the rounds on the internet for some time now. It all started with the official unveiling of Android

KitKat (Android 4.4) where the Nexus 5 was accidentally spotted in the video.

When the Nexus 4 was launched around this same time last year, it was available in two variants: 16GB priced at \$349 and 8GB at \$299 (₹18,382).

Ingram Micro to offer iPhone 5S, iPhone 5C in India from November

Information Technology distributor Ingram Micro has tied up with Apple to offer iPhone 5S and iPhone 5C at trade stores and retail outlets across India beginning Friday, November 1.

Prices are as follow:

iPhone 5s

- 16GB - ₹53,500
- 32GB - ₹62,500
- 64GB - ₹71,500

iPhone 5c

- 16GB - ₹41,900
- 32GB - ₹53,500

The two smartphones will be available contract-free in India, but will also be sold by Airtel and Reliance Communications. Both the service providers have promised to offer attractive data and talk plans with the two devices.

BlackBerry slashes Z10, Q10 and Q5 prices for its enterprise customers; writes open letter

Aiming to cash in on the festive season in the country, BlackBerry announced that it would be slashing prices of its new smartphones for existing BlackBerry Enterprise Service (BES) 10 customers.



iPhone 5s' many colours

Prices for enterprise customers:

- Q10 - ₹39,990
- Z10 - ₹29,000
- Q5 - ₹22,699

Prices for retail customers:

- Q10 - ₹44,900
- Z10 - ₹27,500
- Q5 - ₹24,500

BB writes an open letter

After being at the receiving end of bad press and many a speculation, BlackBerry has shot back at detractors with an open-letter to customers with which the smartphone manufacturer wants "to set the record straight". BlackBerry said that it has substantial cash on hand, and a debt-free balance sheet.

It's important to note that the company isn't shying away from or denying the existence of the current situation: "These are no doubt challenging times for us and we don't underestimate the situation or ignore the challenges. We are making the difficult changes necessary to strengthen BlackBerry." However, the confidence is more than apparent in the rest of the letter.

While the letter is aimed at almost all smartphone users,

BlackBerry has not forgotten that the enterprise audience is still critical to its survival. The letter says that in a BYOD scenario, BlackBerry's devices are much easier to manage and are more secure than Android and iOS. The company reveals that it saw an increase in BES 10 (BlackBerry Enterprise Service) subscribers from 19,000 to 25,000

in the previous quarter, and also speaks about being the best in class mobile social network. Well, Android and iOS users are still waiting to experience a taste of this, with the delay of the official BBM release for the two platforms.

We're not really sure if a letter would be enough to prevent customers from jumping ship to other platforms, but it's definitely heart-warming to see that BlackBerry is still putting on a brave and confident face. Read the open letter at <http://dgit.in/15PJRG7>

RCom launches 'Awesome America' roaming pack for postpaid GSM users

Reliance Communications (RCom) has introduced a new international roaming scheme for its postpaid GSM customers travelling to the U.S called the "Awesome America" pack. It offers a discount of up to 98 percent on data usage and upto 76 per cent on voice calling on roaming. The pack is available for ₹849 with a validity of 30 days.



Looks similar to the Nexus 7

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**Price inclusive of taxes

Security Watch

Turn to this section for a round of the latest security related news from the world over



Micromax hires X-Man

The Indian mobile phone maker has roped in X-Men star Hugh Jackman as its brand ambassador
<http://dgit.in/1804nvc>

The operator says that under the new international roaming plan, data charges have been reduced to ₹10 per MB on roaming in the U.S.

of activation and scenarios – this includes OBD, IVRS, WAP, Mobile Internet, USSD, SMS and Tele-calling. The service provider needs to develop

and position of each user while interacting with their smartphones. SilentSense showed an accuracy of almost 99 percent in the tests.

Machine learning algorithms turn this information into a signature that identifies the user and will lock out anyone whose usage patterns don't match. Users can further enhance the systems' accuracy by using the smartphone's accelerometer and gyroscope to measure how much the screen moves when you're tapping it.

The test was performed on a group of 100 users who were told to use the smartphones' touchscreen as they normally would. Silent-Sense was able to identify the smartphone's owner with 99 percent accuracy within 10 taps.

The researchers stated that the software stops checking the smartphone user's identity when apps and mobile games are being used. However, it automatically switches on when email or SMS apps are being used.

Samsung launches sub-₹10k phones

Samsung has brought out three new budget phones in


smartphones boast of the Android Jelly Bean OS and dual-SIM support.

The Samsung Galaxy Trend has a 4-inch TFT screen with an 800 x 480 pixels resolution and 233ppi pixel density. It has a 1GHz processor. The smartphone has 4GB internal storage expandable via microSD up to 32GB. The Galaxy Trend smartphone offers 2G, 3G, Wi-Fi, Bluetooth 3.0 and microUSB 2.0 connectivity. It has a 3.15MP rear camera and is powered by a 1,500mAh battery. The smartphone is available in black.

The Samsung Galaxy Star Pro has a 3-inch screen with 320 x 240 pixels resolution and pixel density of 133ppi. It has a 1GHz processor and 512MB of RAM along with 4GB in-built storage expandable via microSD card up to 32 GB. The smartphone has a 2MP rear camera and comes with a 1,200mAh battery. Connectivity-wise the device offers 2G, Wi-Fi, Bluetooth 4.0 and microUSB 2.0 support. It's available in white.

Samsung had announced the Galaxy Trend Duos in September for ₹8,700 in India. The smartphone has a 4-inch WVGA display with 480 x 800 pixels resolution. The dual-SIM

Galaxy Trend Duos has a 1 GHz dual-core processor coupled with 512 MB of RAM. It comes with 4GB of internal memory expandable to 32GB via MicroSD card. It has a 3MP rear camera but lacks a front-facing

one. In terms of connectivity, it offers 3G, Bluetooth, Wi-Fi and GPS/AGPS. The Galaxy Trend Duos has a 1500mAh battery and runs on Android 4.0 Ice Cream Sandwich. It's available in white and grey. 



Silent-Sense recognises your touch

the sub-₹10,000 range to display its seriousness towards the Indian market. In October, it launched the Samsung Galaxy Trend and Star Pro, available online for ₹8,260 and ₹6,730, respectively. The two

AWESOME AMERICA ROAMING PACK				
			USA	
	Services	Base Tariff	Pack Tariff	Discount
Pack Rental in ₹			849	
Voice in INR/Min	Incoming call	90	40	56%
	Outgoing call within America	70	40	43%
	Outgoing call to India	165	40	76%
Rs/SMS	Outgoing SMS	15	10	33%
	Incoming SMS	0	Free	NA
Data in INR	Per MB	614.4	10	98%

RCom also recently launched a roaming plan for its GSM users travelling to Saudi Arabia. The plan, called the Super Saudi Pack, is available at ₹786 and allows Reliance customers to save up to 84 percent on voice calls. By paying a charge of only ₹0.24 per 10 KB, you can save 98 percent on data usage while on international roaming.

Complaints for wrong VAS activation reduce by 87%: TRAI

The Telecom Regulatory Authority of India (TRAI) revealed that there's been a significant 87 percent reduction in the number of complaints regarding wrong Value Added Services (VAS) activation since July 2013, when the regulator had released tightened norms for activation and deactivation of such services. The number of complaints regarding wrongly activated value added services on mobile phones has gone from 75,117 in July to 9,338 in August.

There's a catch though. The TRAI figures do not include data from BSNL, QTL, MTS and Videocon.

According to the regulator's new guidelines, operators are mandated to include all forms

a system that has second consent from the customer before the activation of any value added service.

"The first offer of a service is on the service providers' platform and a second confirmation from the customer is through a dedicated consent gateway which is owned by a third party and not by the service provider," said the new guidelines.

"In case of USSD and SMS mode of activation, no activation response time should be greater than 10 seconds and 60 minutes, respectively and in case of non-response, the same should be treated as 'no activation required'."

Now smartphones recognise you by your touch

Cheng Bo and his colleagues at the Illinois Institute of Technology have developed a new smartphone software called Silent-Sense that can identify smartphone owners by the way they tap or swipe across the touchscreen.

Cheng Bo said that Silent Sense uses the phone's built-in sensors to record the unique patterns of pressure, different fingertip sizes and duration

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Read about the pros and cons of using an alternative keyboard like Dvorak or Maltron and decide for yourself <http://dgit.in/GUe9tc>

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Using a one-watt LED lightbulb, Chinese scientists took four computers online. Read more here: <http://dgit.in/19WEJhH>

The butterfly effect

Read on to explore the latest developments in the web space triggered off by other advancements on the internet

Facebook removes opt out setting and adds privacy setting for teenagers

Facebook has further relaxed its privacy policies and users can no longer opt out of appearing in search results. The social network, so far, was letting users opt out of being searched by name but now has removed that

book states that it led to a lot of confusion while using Graph Search which lets you search for friends, check everyone's status updates and shows profile pictures to everybody in a group.

Bringing back the teens

The social network now also lets teenagers between 13-17 years share images and posts with

you tag could end up getting friend requests and messages from people you don't know personally." The default settings won't change or affect past posts for existing teen users' profiles.

The new settings will help Facebook compete against other social networks such as Twitter and Tumblr which don't prevent teens from posting publicly. The new privacy settings will appeal to advertisers as well as they'll have access to the photos, comments of teenagers, etc.

Yahoo! Mail revamped; faces fury of users

Celebrating the 16th birthday of Yahoo! Mail, Yahoo! revamped the look of its email service across all platforms with a new design and slew of features such as themes, collapsible toolbar and improved management of threaded conversations. The storage space on the service is now 1TB for all users.

Inspired by Flickr and Tumblr, Yahoo!'s redesigned mail service offers a number of theme options as well as image-free colour themes. Users can sync a theme across all the platforms on which they access the mail service. The sidebar can be collapsed and there are now shortcuts to star or send messages to trash. There's also an option to view the threaded conversations with 'quick view'. This feature is similar to Gmail's threaded con-

versations. Users can access the 'quick actions' when they hover or select a mail. To sort incoming messages, Yahoo! offers up to 200 filters – double the number of filters available now.

Moreover, Mail Plus features are now available to all Yahoo! Mail users. Users can now create a disposable email address if they don't want to give out their primary address. Users can forward their mail to another email account as well as another Yahoo! Mail address. The service also allows you to download your Yahoo! Mail messages using a desktop email application such as Outlook, and then access them offline.

Angry Yahoo! Mail users

The redesign, however, is facing major backlash from users who are furious over missing tabs, bugs and eliminated features. Disappointed Yahoo! Mail users are comparing it to a knockoff of Gmail. In October, users posted over 5,200 complaints reporting bugs and reduced functionality in the server.

The biggest complaint is the elimination of a feature that allowed users to open search pages and email in individual tabs – a feature that distin-



Facebook changes its privacy settings again

option. The company said that only a small percentage of Facebook members were using it. Now any member on Facebook can search for anyone without any restrictions. Facebook said that this search setting won't disappear for those still using it until those users get a notification and click a button reading, "Okay, I understand." Those notifications will be going out in coming weeks, the company said in October.

The feature was intended to prevent users from showing up in searches conducted by non-friends. However, Face-

the general public. However, for teenagers, the default settings allow them to share with 'friends only'.

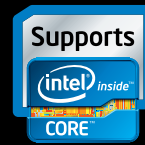
All users can now change the settings to share images, pics and posts with other friends, however they'll receive a reminder if they choose a public sharing setting stating that their posts can be seen by anyone, not just people they know. Facebook will send a warning to teenagers if they make changes in the setting to public saying "Did you know that public posts can be seen by anyone, not just people you know? You and any friends



Yahoo! Mail was revamped last month

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Bicycles of the future

Honda Unicub and Toyota Winglet were on display at Japanese tech show, Ceatec. They're still at concept stage <http://dgit.in/H8o5iy>



Karbonn's 4 new budget phones

Karbonn launched four smartphones for below ₹8,000: A16, A99, A35 and A90. They're 2G and 3G-enabled smartphones in the ₹5,500-7,500 price range <http://dgit.in/19Qn9It>

guished Yahoo! Mail from its biggest competitor, Gmail. The new Yahoo! Mail design also leaves out a 'print' button for users who need paper copies of their email. Users can no longer view their folders unless they leave the inbox, while new email will no longer show up in bold. The delete button is placed rather unfortunately, next to the sender's name.

Users have also complained that they can no longer sort their email by sender. Many users have complained of bugs in the server including drafts not getting saved, text not being formatted properly, email not being sent and errors while logging into the site. Some users have also reported that their contacts are being automatically deleted from their address book without their consent.

This is Yahoo!'s second redesign in the past seven months. The first redesign had also received a lot of flak from users. Thousands of Yahoo! Mail users are requesting the site to revert the changes.

Bing search adds Klout-verified snapshots

Snapshots on Bing will now include the public portions of your LinkedIn profile as well as your best moments on social networks like Instagram and Twitter with your Klout score.

The initial implementation will show Klout scores

provide information at a glance. This move by Klout and Microsoft will give users more control over information that appears about them on search. Klout users who have Wikipedia entries associated with their accounts will get Klout score boosts based on the number of times their entries show up in search.

In a blog post announcing the new feature, Klout said, "You'll now be able to easily share your professional accomplishments and highlights, as well as your most influential moments on Instagram and Twitter, when people search for you on Bing."

Klout is a social ranking website that uses analytics to study a user's reach over social networks such as Facebook, Twitter, Instagram and even Flickr and gives you a score between 1 and 100. The more profiles you tie to your Klout profile the more accurate the scoring becomes.

Snapdeal introduces ReGlobe, a platform to sell used gadgets

Snapdeal has introduced a new platform called ReGlobe, where users can sell used gadgets such as mobile phones, tablets and laptops to the retailer. The new Snapdeal service is available for free to its users. The service will soon expand to other categories in the near future.

"Only thing users have to do is identify their gadgets' brand and make on the site, fill in details about its condition, get a quote from Snapdeal.com, schedule

a pick-up or drop-off and get paid in cash instantly," said the online retailer in a press release.

Once the gadget has been physically verified by the



Sell your old gadgets on ReGlobe

ReGlobe technician, the customer gets paid the exact amount mentioned in the online quote in cash. In case of any discrepancies between the details filled online and the actual condition of the gadget, the technician will revise the quote and if the new amount is agreed upon by both parties, the payment will be made on the spot, explains Snapdeal.

Currently, the pick-up services are available in Delhi, Gurgaon, Faridabad, Noida, Ghaziabad, Mumbai, Bangalore, Secunderabad and Hyderabad. Snapdeal plans to add new cities every month.

Researchers develop algorithm that can reveal life history based on your Tweets

Researchers at Carnegie Mellon University in Pittsburgh and Cornell University in Ithaca have developed a new algorithm that can sort out news of important events from entirely trivial details in Twitter streams.

The algorithm developed by researchers Jiwei Li and Claire Cardie can depict important events in an individuals' life without knowing anything about them. The team of researchers tested the

algorithm on 20 ordinary Twitter users and 20 celebrities over a 21-month period from 2011 to 2013.

According to 'MIT Technology Review', the researchers asked 20 users to enter their most important tweets manually, to depict their own life history. For celebrities, Li and Cardie used Wikipedia biographies to create 'gold standard' life histories manually.

Following this, the two researchers compared the life histories generated against the ones generated by their algorithm. The results were quite accurate. The algorithm also managed to pick out several factual life events.

"Experiments on real Twitter data quantitatively demonstrate the effectiveness of our method," the researchers said.

However, this works for users who have Twitter accounts and update their status messages regularly. The user also needs to have enough followers to allow the algorithm to spot the unique pattern of responses that identifies the tweets important to the calculation.

"It can be extended to any individual, (eg friend, competitor or movie star), only if he or she has a twitter account," they added.



for friends in the "People Who Know" section of the right-hand column. The snapshots will contain useful information about people, topics, places and will

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Zynga, stage left!

Justin Waldron seems to be moving on with his Lifestylle
<http://dgit.in/19Lqf0p>



PNR Status

Here's an interesting app by NFN Labs to make missed trains a thing of the past
<http://dgit.in/idontwannamissmytrain>

Navigation apps for Android, iPhone and Windows Phone

One new navigation app after the other, from the same brands that make standalone GPS navigators. We give you options for each platform

Vishal Mathur

vishal.mathur@thinkdigit.com

When you read this magazine last month, you probably came across a mention of the updated TomTom navigation app for smartphones. This time around, we're here to show you the way with more than one navigation app recommendation, considering how many there are, it must be hard to pick one.

Sygie for Android goes free

It was rather big news in this domain when the Sygie navigation app for Android slashed its price from ₹1,399 to Free! By far, the best GPS navigation app that we've tested, Sygie has excellent offline maps and voice navigation. Sygie for Android continues to use the MapmyIndia maps, with 3D maps for certain cities and landmarks. The offline maps download and store ability means you can also use this on a device with no connectivity to the internet. You can download maps for specific regions across India, which not only makes the downloads easier to manage, but also less time and space consuming. In case you haven't already, you might just want to download this and keep it on the phone for emergencies.

Price: Free

Android: <http://dgit.in/1h4Ng3C>



ANS for iOS

This could be a case of wrong timing for Ayana Navigation Solutions (ANS), but just as the Sygie app went free, the company launched the ANS Navigator for iOS devices. The app offers live traffic updates, which gives it an immediate edge over the Sygie app. The 3D Maps don't look as good as Sygie, but they get the job done smoothly. In what's a rather tight integration with the iOS contacts, the ANS app lets you access contact addresses from within the app, and start navigation. Google's local search is a neat feature to have, but there were many times when it simply said "server connection error" while using 3G on the move.

One big issue with the ANS Navigator application is the extremely cramped on-screen

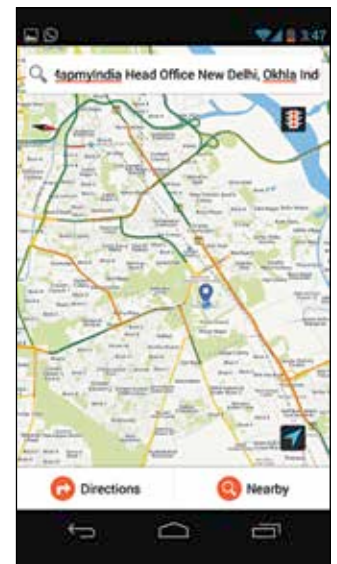
keyboard, each key of which is extremely narrow. If traffic updates are important for you, then this app is a must have on the iPhone.

Price: ₹1,650

iOS: <http://dgit.in/15ZVgyc>

MapmyIndia Maps for Android and Windows Phone

With MapmyIndia also providing maps for the Sygie app, it becomes a tad confusing for most smartphone users to decide which application to download. The MapmyIndia Maps app for Windows Phone and Android brings the visually excellent maps typical of the company's standalone GPS devices. While it lacks the three-dimensional brilliance of the Sygie Maps version, it gets the job done with absolute ease. The interface of



the app looks very different on Android than on a Windows Phone, with the latter's version completely blending in with the OS' unique interface. Interface and maps aside, you get a fairly well laid out set of features that won't confuse a first-time user of such an application. Unfortunately, the search for addresses wasn't always the smoothest, and we ended up relying on nearby landmarks to get to certain locations. However this is hopefully something that MapmyIndia can improve with a future update. The app doesn't offer offline maps, but compensates for this by offering traffic updates along the route you may be travelling. It's certainly much more convenient

Price: Free

Android: <http://dgit.in/16pCcMg>

Windows: <http://dgit.in/1eG7oHe>





This.Is.Vegaas!

The hardware battlefield in Vegas tenses up
<http://dgit.in/15KEvqD>

Better online shopping

Online shopping can be convenient, but sometimes, things go wrong and how! Here's a quick guide to avoiding such fiascos <http://dgit.in/GP5mZC>

App Watch

DishOnline – Live TV for your smartphone or tablet

Dish TV is the first DTH provider to offer Live TV on your phone. Impressive beginning, and the only direction is towards improvement

Vishal Mathur

vishal.mathur@thinkdigit.com

If you've wanted to watch Live TV channels on your smartphone or tablet, you've had to rely on third-party apps and service providers. But, if you're a Dish TV Direct to Home (DTH) subscriber, you can now also get Live TV on your Android or iOS device via its dedicated app. Additionally, Dish TV is also providing something akin to Time Shift TV (access to older programming on any channel) as well as a range of movies and



The interface is very easy to use

free to download, but the service requires a subscription. There are two packages: Jumbo Pack for ₹69 and the Starter Pack for ₹29. This service is available to Dish TV DTH subscribers.

Dish TV provided Digit with access to the DishOnline app for testing, and the overall package seemed rather impressive, considering that it's the first attempt by any DTH provider in India. However, there's considerable room for improvement for the dittotv.com powered app.

The channels: Only the beginning, hopefully!

There are 35 channels on board at the moment, with Dish TV saying that more channels will be available soon. The channels on the DishOnline list are avail-

able on the DTH platform and are currently in their Standard Definition (SD) versions.

Interface: You can't get lost here

The first thing you notice on opening the app is the amount of empty grey space on the homescreen. A black strip running horizontally lists all the sections and options such as Live TV, Movies, TV Shows etc. The same colour theme and horizontal scrolling method is followed throughout the app. Quite neat, since it doesn't overwhelm the user with too much information on the screen. However, while you're in the various Video On Demand sections, the genre and sorting methods are a tad uncomfortable while horizontally scrolling. The colour theme is easy on the eye, and the font sizes used are very comfortable even on a smartphone, and even more so on a tablet. There are not too many sub-categories or sub-layers to remember and negotiate.

Anyone using a DTH connection will be used to seeing the Electronic Programme

Guide in the same method as the DishOnline shows it.

While DishOnline never had any issues, it did crash once on the iPad when we were sorting the movies section by language, wanting to only see the English and Hindi content. Maybe something that can be ironed out in a future update.

Picture Quality: Massive scope for improvement

Be it Wi-Fi or 3G connectivity, the streaming was mostly stutter-free. While the content looks good on a smartphone



Digit watched a match on Ten Action

or even an iPad Mini, you can't help but notice the generous dose of noise when viewing on a higher resolution screen. Read the rest of this review at <http://dgit.in/GZNTth5>



The app follows a black and grey theme

videos in various languages. All this is a part of the Video On Demand package. The app is called DishOnline, and can be downloaded for Android and iOS at <http://dgit.in/H83StG> It's

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- M8 (BEST OF COMPUTEX 2013 HARDWARE AWARDS)
- Z87 Extreme6/ac (A MANDRECH EDITORS CHOICE SILVER)
- Z87 OC Formula (MUST HAVE EDITOR'S CHOICE)
- Z87E-ITX (MUST HAVE EDITOR'S CHOICE)

ASRock
Get One, The Best One



PS4 Spaces Out

PS4 seems to have realized gamers need more space today... Say hello to the 1.5TB Playstation. <http://dgit.in/1eF3sXa>

Steamed Slender Man

Slender: The Arrival hits Steam for \$9.99. Read on for details <http://dgit.in/1cSjFb4>

I spy with my little eye...

Some true, some false. Find out how true are the rumors of security breaches on the net and your phones

Researchers claim that Apple and NSA can read your messages

Apple had recently released a statement regarding customer privacy stating that the company was unable to access or decrypt iMessage and FaceTime conversations. Researchers refuted the company's claim at the Hack the Box conference in Kuala Lumpur.

Researchers in a recent study of the iMessage protocol found that Apple has the ability to intercept and decrypt iMessages. Despite the fact that the messages are encrypted end-to-end, Apple handles the keys needed to encrypt and exchange the messages. Security researchers are claiming that it's actually possible for someone inside the company to intercept messages as the company has access to public iMessage keys. However, researchers emphasised that there's no indication whether Apple or the government is actually doing so.

Researchers state, "With a public server, such as MIT's PGP Public Key Server, the sender can at least see more information, such as whether a key has changed. At that point, the sender can decide whether they want to trust it or not, if they suspect a man in the middle attack. Apple's key server is not public."

A blog post published by Cyril Cattiaux, an iOS jailbreak hacker states, "Yes, there is end-to-end encryption as Apple claims, but the weakness is in the key infrastructure as it is



controlled by Apple: They can change a key any time they want, thus read the content of our iMessages."

"The biggest problem here is you just cannot control that the public key you are using when you are ciphering the message is really the key of your recipient and not, for example, the public key of some guy in Apple," Cattiaux said.

India, ICANN to set up center to ramp up internet security

The Center for Development and Advanced Computing (CDAC) has tied up with the International Corporation for Assigned Names and Numbers (ICANN) to develop a research facility that will help prevent cyber attacks and security threats. The facility will be known as Center for Excellence in DNS Security.

"We are always in doubt when accessing the internet whether whatever is being shared is visible to someone else. We need to dispel this fear, which is associated to the internet," J Satyanarayan, secretary, department of telecom-

munications is quoted as saying. The two sides on Thursday signed an expression of intent with regards to setting up the research facility. Representatives from the CDAC, an agency of the union ministry of communications and IT, and the ICANN also discussed ways to co-operate on issues related to governance and management of the internet infrastructure.

Union Minister Kapil Sibal called for a "consensual approach" to develop an institutional framework of the web.

"India is a natural multi-stakeholder society. It shouldn't be a huge effort [for India] to



lead us in this space of multi-stakeholderism," ICANN president and CEO Fadi Chehade said at the FICCI conference, later in the afternoon.

"This centre will play a central role in ensuring the security and stability of the Domain Name System. The Internet has become one of the world's most valued resources and it deserves nothing less than full global cooperation and collaboration in developing concrete solutions to combat threats to the DNS," said Chehade of the new research facility.

Huawei dispels security fears, states no government has asked for its data

China's Huawei Technologies Ltd. has been trying to dispel fears that the company is controlled by China's Communist Party or might be a security risk. It has released a cyber-security report stating that no government has ever asked information about its customer data.

Huawei released a report following an outcry over disclosures about the role of the internet and telecom companies in sweeping U.S. government surveillance. The report is written by a Huawei executive who is a former British official and asks companies and regulators to co-operate in setting global standards and for customers to press suppliers to improve security.

Huawei has faced suspicions about its activities and has been barred from bidding in an Australian broadband network. The company stated that it's owned by its employees and denies being controlled by China's ruling Communist Party or military.



Flac Your Frags

Interested in good headphones for gaming? Here's some food for thought to help you decide <http://djit.in/180ceHr>



Facebook WP 8.1

The updated Facebook app has been officially released for Windows 8.1 by Facebook

Security watch



"We have never been asked to provide access to our technology, or provide any data or information on any citizen or organization to any government," said Huawei's deputy chairman, Ken Hu, in a foreword to the report.

Is your Wi-Fi well and truly secure?

It's almost second nature now, whiling away a few moments

online using a Wi-Fi hot spot. But hooking up to an alien network can carry hidden risks. Despite this, more than a third of users take no additional precautions when logging on to public Wi-Fi, according to the *Kaspersky Consumer Security Risks* survey conducted by B2B International and Kaspersky Lab in the summer of 2013.

Nowadays, it's easy to get online - in addition to cellular networks and broadband cable communication networks, there is often at least one hot-spot which can connect computers and mobile devices to the Internet.

However, many of these hot-spots skimp on protection for users who are either unaware or unconcerned about the potential problems this can cause.

In the survey, 34% of users said that they took no special measures to protect online activity using a hotspot. 14%, on the other hand were happy to bank or shop online using any network that came to hand. Just 13% took the time to check the encryption standard of any given access point.

Caution is never a bad thing. In an open Wi-Fi network, there is a very obvious entry-point into your privacy - the man in the middle.

There may be a person in whichever public place you are sitting on the next table, monitoring the internet traffic in your vicinity, looking for a window of opportunity to slide in and take control of any sensitive data lying around on your laptop, or accessible through

your phone or tablet. Credit card details based on the transaction details of Arkham Origins that you couldn't wait to prebook online, for instance.

It's one thing to ask you to build yourself a bunker 60 feet under the ground and rely on short-wave communications to order your pizza, and quite another to ask you to simply upgrade the security on your electronic items to prevent being caught with your pants down.

One such option is to use an Antivirus which has the option of keeping your financial details behind a virtual vault right there on your laptop. It's not much of an effort on your part, and you may prevent being a hapless victim of credit card fraud, amongst other things. Stay smart. Stay protected.

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Canon P-201

Canon's new portable scanner weighs 550g & measures 312.5 x 55.5 x 40mm. Price: ₹11,995/-



No need for speed

The next installment in the NFS series will be avoiding the next gen Wii console <http://dgit.in/15ZSeds>

HTC One Gold

If you've ever fancied King Midas, you'll probably love this pure 18-carat gold beauty. If the HTC One wasn't already one of the most well-crafted smartphones ever made, the Gold is yet another reason to buy it, but be advised – only five of these were ever made by HTC to celebrate the 18th anniversary of MOBO Awards and each costs \$4,420 or ₹2,87,500 to be precise. Though it's hard to get your hands on one of these, it doesn't hurt to try.



Take what you want, but leave me my toys!



Red Harbinger Cross Desk

Usually we use a desk to keep our PCs on but the Red Harbinger Cross Desk destroys that concept. As per its design, the Harbinger is a desk and a PC case rolled into one. Inspired by the immensely popular and award-winning L3p D3sk modding project, the Cross Desk can accommodate the most costliest and most outrageous computer components your mind can possibly think of. And get this: you can build two separate rigs, add the huge liquid cooling components, install twenty 3.5-inch drives, hide cables using its excellent cable management system and add some futuristic lighting to pimp up your desk. This ridiculously awesome desk can be yours for a measly \$1,700. The cost doesn't include the PC hardware, shipping and customs. Add this up and what you get is a nice way to burn your Diwali bonus.



2D glasses

Ever had problems with 3D movies which really shouldn't have been 3D movies? Un-3D your 3D glasses with this article <http://dgit.in/1eG6t9P>



Subtitle your life

Will Powell comes up with a way to subtitle foreign languages on the go, through your glasses <http://dgit.in/186lCv5>

Drool maal

Portal Sentry Turret

Are you a gamer who was left smitten by Valve's Portal franchise? If yes, then you're sure to remember GLaDOS and those cute little turrets that fired bullets once they detected your presence.

After all this time, the enthusiasm for the game still hasn't died over and the folks over at Gaming Heads have started selling replica models of these lovable talking turrets. You can get this 16-inch tall hand finished video game paraphernalia at \$330 (₹20,346) a piece, but hurry, only a limited 350 of them are up for grabs.



Continuum Caliburn + Cobra + Castellon Turntable

If you say that Vinyl LPs are dead, chances are that some hipster will throw his useless copy of Rebecca Black's Friday at you. Nevertheless, the LP is still the music format of choice for many audiophiles. Of course, you need a good turntable to play your collection of records, and Australian audio specialist Continuum has an answer for you in the form of its \$160,000 (₹9,86,4800) turntable – the Caliburn. Made of aircraft grade aluminium that consists of a floating platform, a platter weighing 36 kgs and a specially designed motor which is incidentally also used by the U.S. military for motion control systems, the Continuum Caliburn is a state-of-the-art example of what you can expect in high-end audio equipments. Want it? Put your name down and wait for 10 months. After all, you asked for a made-to-order, über expensive turntable.

Fitbit Flex

If you've gained some weight due to those long working hours cooped up in front of a computer screen chomping on fries, this product is just for you. The Fitbit Flex is a wireless activity tracking band that keeps a log of your steps, distance travelled and calories burnt – all through the use of an app installed on your smartphone that's connected to the wearable Flex band. Its uses are not limited to this; it can also be used to log your food activity, measure the time duration of your sleep and wake you up with its silent vibrating alarm. Available in trendy colours, it can be yours for just \$99.95 (₹6,162).



THE NAKED TRUTH

How your privacy is dying
a slow death online

Nikhil Pradhan



There is a war going on right now, and unbeknownst to you, you are both the soldier and the casualty in it. Like most wars, this one is made up of a collection of battles rather than a single massive conflict taking place in one spot. However, unlike most wars where the opposing forces tend to be somewhat evenly matched (in one or the other aspect), here we have the behemoths of entire governments along with multi-billion dollar corporations fighting against lone individuals. People like you and me.

Come to think of it, this isn't a war, it's more of a slaughter.

Writing about privacy (or rather the wholesale murder of it), in the wake of the Snowden revelations is a depressing affair. This is not because the fight to regain control over our online lives looks extremely difficult, but rather because we've already lost that fight and the only thing we can do now is try and staunch the bleeding and cauterize the wounds. This process did not happen overnight, no, it happened incrementally as we became more and more willing to choose conveni-

ence over privacy, while companies like Google, Facebook, Microsoft and Yahoo encouraged it – hell, incentivized it. Now, anyone with access to the databases of these companies can paint (and in certain cases, have painted) a complete picture of a person based on their online footprint. And now as the governments around the world tighten the screws on these companies and spy on each other, your privacy is at risk, and as creepy as it may sound, you are, for all intents and purposes, naked to someone with intent and access to your data. Imagine, private emails sent between

you and your girlfriend, all available for the viewing pleasure of some nameless government or corporate agent.

Like we said, this tale about online privacy is not a happy one, not even a hopeful one. If you started out reading this story thinking that we would be able to share some amazing solutions with you that would help erase your worries, then we're sorry to disappoint. However, through this story, our attempt will be to bring you up to speed on how your online privacy is being infringed upon and which are the major parties involved in the process. In the story that follows, Anirudh will also share tools you can use and best practices

at 29 years, 11 months and 24 days, he was branded a "defector" and a "traitor" by the United States government and charged as a spy. Today, a mere five months later, Snowden's name is synonymous with the now commonplace news on online spying and privacy infringements that both the US and other governments are actively engaged in.

In May of this year, Snowden who was working with Booz Allen Hamilton, a defence firm sub-contracted by the NSA (National Security Agency), in Hawaii, flew to Hong Kong with data pertaining to the U.S. government's mass surveillance programs. In Hong Kong, Snowden got



The eye in the sky

tion tools being used by the intelligence community. However, there's no denying the fact that PRISM is actually a very powerful tool within the scope of its functionality and makes the job of analysing collected data a whole lot easier for all the people concerned.

Apart from PRISM, Snowden also revealed the existence of programs such as XKEYSCORE and TEMPORA that were part of a global surveillance program conducted by not only the US but also its allies that included the UK, Canada, Australia and New Zealand. Through a concerted effort, these countries are keeping tabs on India and other nations like China, Iran, Pakistan, Russia, France, Brazil, Japan, Germany and Afghanistan (some of which have their own surveillance presence on the Web) primarily using data gleaned online.

Perhaps more shocking were the media's claims about how most of the technology companies that have become a part of our daily lives (think Google, Facebook, Yahoo, Microsoft) were in bed with the NSA and the various governments of the countries they were operating in. These reports also accused the companies of giving security agencies 'backdoor' access to their servers. These accusations have turned out to be somewhat inaccurate (unless the company's name happens to be 'Verizon' or is another U.S. telecom operator) and we'll talk about these allegations in the next section of the story.

The Orwellian Internet

As the scope and reach of the Internet has widened, we've become more and more comfortable with the idea of storing our personal and private information online. This is because we do implicitly and explicitly trust the services that we use online, at least to a certain extent. For instance, you wouldn't think twice before

"PRISM' is actually something like a customized interface that NSA and other American intelligence analysts use to collate and view intelligence data collected."

you can follow to make sure you're doing all you can to protect your privacy the next time you're on the Internet.

Snowden: The Man Who Opened the Floodgates

Edward Snowden, 30, is an unassuming looking man with the appearance of a stereotypical IT professional. A pair of slim glasses frame his face and only add to this picture of someone who could be described using generic, bland terms such as 'normal' or 'average'. Despite this regular-Joe image that Snowden projects,

in touch with The Guardian, a UK based newspaper and proceeded to leak critical data that painted the entire picture of how massive the surveillance undertaking actually is.

One of the most important revelations was regarding something called 'PRISM' that has been incorrectly branded as THE tool being used by the NSA to keep track of the Internet. 'PRISM' is actually something like a customized interface that NSA and other American intelligence analysts use to collate and view data collected by the various data scraping and accumula-



A video still of Edward Snowden talking to the Guardian

asking your lawyer or broker to send you copies of your property documents, or your HR to send salary details over Gmail, would you? Of course, as naive or simplistic as it may sound, you also always have the option of not using a particular service. The Terms of Service for any online service is available for your viewing at any point of time and if there's something there you don't agree with,

recognizes the right to privacy only of its own citizens, which is the policy that the US government follows.

So, what happens when a company you've chosen to trust with your data gets in bed with a government that you don't?

Unfortunately, the answer to that is, 'nothing good', especially if you live outside the US but primarily use online services from American companies,

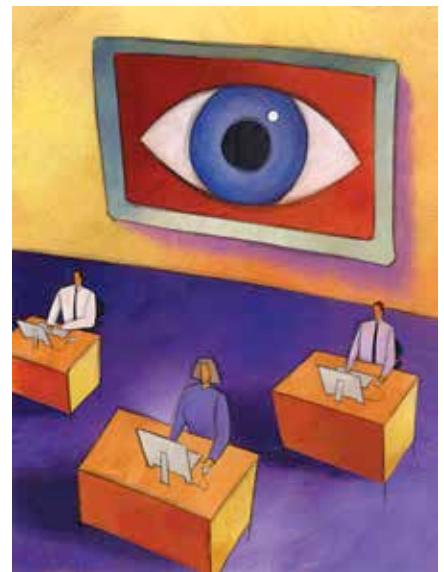
“According to a confidential NSA slideshow presentation, Microsoft began providing data to the PRISM program back in September of 2007.”

you can bid adieu to that service. However difficult or complicated the process may be, the truth is that online services do offer you a choice.

Now, with governments, it's a different story altogether. You don't really have a choice whether you want to trust your government or not. While there is implicit trust in play, Snowden's revelations have proved that there is a LOT that governments do that concern you but you're not made aware of. That gets even worse when the government in question is not even of your country and that government follows a formal policy that

something that describes most Internet users in India. Post-the Snowden expose, when the media began reporting that most of the big online companies were sharing user information with the US government wholesale (and getting paid for it), the companies reacted with absolute denials stating that they were only cooperating with the government up to the extent required by specific court orders and warrants. As it turns out, while there's some truth to that, there's also more to the story.

As per the documents leaked by the Guardian, Microsoft may have been the



Big brother is watching

first company to agree to a relationship with the NSA. According to a confidential NSA slideshow presentation, Microsoft began providing data to the PRISM program back in September of 2007. Microsoft has also allegedly provided the NSA with a method to access emails and chats on Hotmail and Outlook.com, before they are encrypted.

Microsoft, on its part, has denied that it has a special relationship with the NSA and has stressed that it only shares user information when served with a legal order.

Google's relationship with the NSA (which began in January 2009) has been more tenuous when compared to Microsoft's. While the Snowden documents accuse Google of engaging in similar activities as Microsoft to make it easier for the intelligence agencies to procure user information, Google has also vociferously denied the existence of a back door to its servers and while it has admitted that it has been the subject of numerous requests from the US government with respect to level of access to user data, it has denied permission for any direct access to its hardware. Instead, as told to Wired by Google Spokesperson Chris Gaither, Google responds to data requests backed by a legal order by either handing over the data in person to the agencies involved or through a secure FTP server where the data is hosted for the perusal of the NSA.

Being the largest entity on the Internet, it's only obvious that Google will

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Special Source Operations (TS//SI//NF)

PRISM Collection Details

Current Providers

- Microsoft (Hotmail, etc.)
- Google
- Yahoo!
- Facebook
- PalTalk
- YouTube
- Skype
- AOL
- Apple

What Will You Receive in Collection (Surveillance and Stored Comms)?
It varies by provider. In general:

- E-mail
- Chat – video, voice
- Videos
- Photos
- Stored data
- VoIP
- File transfers
- Video Conferencing
- Notifications of target activity – logins, etc.
- Online Social Networking details
- Special Requests

Complete list and details on PRISM web page: [Go PRISMFAA](#)

TOP SECRET//SI//ORCON//NOFORN

A slide from the leaked NSA presentation



Et tu, brutus?

be the subject of attention from both the governments and users. To which of these parties Google has demonstrated more loyalty is something that's still not clear.

Yahoo has also been caught up in the web of privacy infringement and why not? After all, its main website and its services are one of the most popular globally only surpassed by the juggernaut that is Google. Yahoo was also one of the big names mentioned in the leaked documents as one of the companies that have allegedly handed over users' personal data to the NSA on a silver platter. Yahoo

Tracking India

So, where does all of this leave us here in India? Since India is the fifth most tracked country by the NSA according to the Snowden leaks, using most of the popular online services is something like a double-edged sword for you. First, your personal data is as much at risk as anyone else in the US, and second, as per the policy followed by the NSA and its paymasters, you don't have any rights to privacy especially when the American government comes into the picture. While all the companies we've mentioned ear-

lier have iterated over and over again that they do not provide information to the US government at the drop of a hat, you have to realise that most of this data gathering process is still wrapped under layers and layers of institutionalized secrecy.

The only real choices that you do have is to- a) trust the Googles, the Facebooks, the Microsofts and the Yahoos of the world b) or opt out of using any of these services, which is almost an unthinkable act in this day and age, c) or resign yourself to the idea that there will always be the risk of your private data being viewed by someone else overseas, d) or simply refrain from using the Internet when it comes to highly personal or private data.

Now, as if this story wasn't depressing so far, this is not the only thing that you've got to worry about, if you care about online privacy. The Indian government has also taken a shine to online surveillance and has in place processes through which it has an unimaginable potential to monitor almost 100% of the web traffic that flows in and out of our shores. This it does with the help of LIM (Lawful Intercept and Monitoring) systems that have been deployed at the primary gateway nodes of the major Indian ISPs, through which all of India's Internet traffic is routed to and from the rest of the world. By being the only ones controlling and maintaining these LIMs, the Indian

"India is the fifth most tracked country by the NSA according to the Snowden (document) leaks."

has, of course, denied those allegations just like Google and Microsoft and has in fact sued the US government so that the company can make it clearer to its users about what it's sharing with the government. Facebook seems to be in a similar boat, accused of being lax with the personal information of its billion strong userbase while denying that it has gone out of its way to help do that.



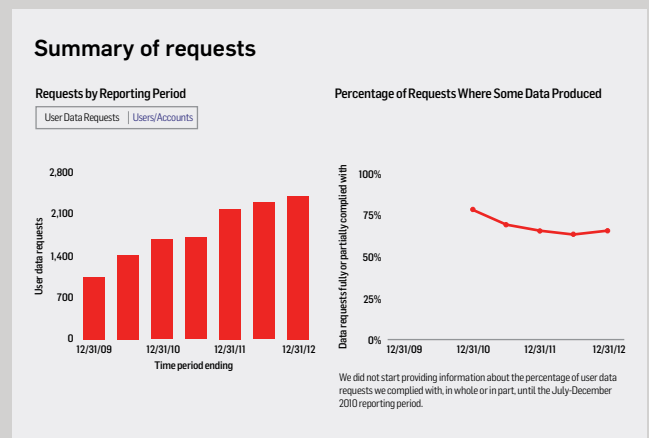
Google Co-founders Larry Page and Sergey Brin (AP Photo/Paul Sakuma)

Privacy in India

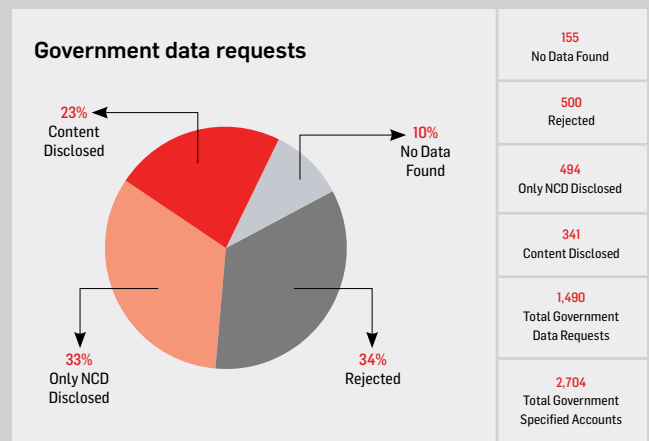
The Indian government has also seen fit to go after private companies in search of your data, just like the NSA. Transparency reports released this year by Google, Facebook and Twitter reveal how interested the government is in the going ons in social media. According to Google's transparency report released this year, India was the country that made the second most number of data requests from the search giant (over a period spanning July to December 2012) at 2,431 requests about 4,106 users, 66% of which resulted in some data being handed over to the government. In comparison, the US, ranked number one on the list, made 8,438 requests about 14,868 users on Google with an 88% 'success rate' while France came in third with 1,693 requests about 2,063 users of which only 44% were handed over. India's numbers have only grown from the previous transparency report which showed that from January to June 2012, the Indian government made 2,319 data requests on 3,467 users with a 64% 'success rate'.

Moving on to Facebook, here too the Indian government ranks second, only outmatched by the US' desire to spy on its own citizens. From January to June 2013, India made 3,245 data requests about 4,144 user accounts of which Facebook was able to hand over 50% of the requested data. Germany falls a distant third with about 58% of India's data requests. Twitter, on the other hand, has seen not seen too much attention from the government but we should accord that to the fact that rarely is Twitter used for private communication, rather than a sudden change of heart up top.

In its transparency report that spans the first half of 2013 (January to June), Yahoo has revealed that India made the seventh most data requests globally with a total of 1,490 requests for 2,704 user accounts, of which 341 requests were handled by disclosing the content of the information while some data on 494 requests was revealed to the government.



An image showing data requests made to Google by Indian government



An image showing data requests made to Yahoo by Indian government

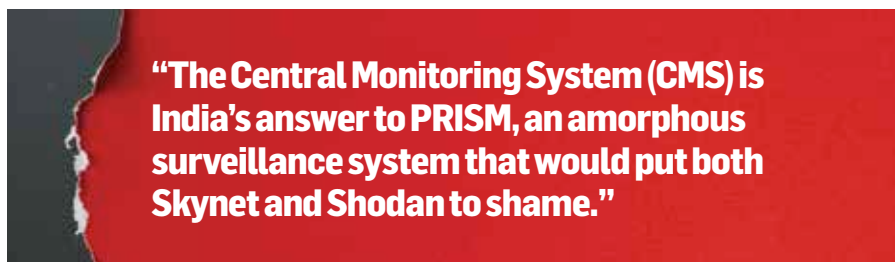
government essentially can sift through all the data generated on the Internet by the 160 million odd users who go online regularly in our country.

While the government has asked ISPs to appoint nodal officers to liaise with the government regarding what data

help from any of these ISPs. As a result, as the Hindu found out, none of the major Indian ISPs have bothered to install the LIM systems at their end or even appoint nodal officers. There also don't seem to be any legal safeguards with an eye out for user privacy in place, although

an amendment that gave the government even more power to intercept, monitor and decrypt online communication for reasons of 'national security'.

But wait, there's more! Right out of the pages of a story written by someone who could only be the love-child of Stephen King and George Orwell, comes the Central Monitoring System (CMS), India's answer to PRISM, an amorphous surveillance system that would put both Skynet and Shodan to shame, put together by the Centre for Development of Telematics (C-DOT). The data collected from the CMS will be put to use by India's intelligence agencies, Indian Revenue Service (for monitoring tax collections) and by the NATGRID (National Intelligence Grid), an interconnected integrated database for all intelligence services in India.



is required and whether its legal (and feasible) to pull it out, for all intents and purposes that's a moot point, since the government doesn't actually require any

privacy is protected under Section 419A of the Indian Telegraph Rules 1951 and the Information Technology Act of 2000 (before it was mutilated in 2008 through

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The CMS is expected to have a massive scope, in fact as per C-DOT's ambitions, once fully setup and in its second year of operation, the system will be able to track any mobile user in the country up to 95% accuracy. Apart from just being able to track your geographical location within our borders, the CMS is

BlackBerry and the Indian government following which BlackBerry did comply with directives to let the government monitor all of its users' encrypted data. These aren't isolated incidents but rather signify how important online surveillance is for the intelligence gathering community both within our borders and

that while globally about 79% of Internet users were concerned about online privacy, that number jumped to 94% when it came to Indian citizens.

The Road Ahead

So, if you haven't already put a gun to your head, this is where you stand. Everything that you do online or on your cellphone can be tracked, intercepted, monitored and collated by not only your own government but also foreign ones. Thanks to the paranoia that the words 'terrorism' and 'national security' can engender, you, in effect, have minimal or altogether no right to expect privacy if you happen to use the Internet or a cellphone.

The only possible way to fight back to regain your right to privacy would be spread the word about what is going on and hope that soon this fight will gain enough traction to garner the attention of the lawmakers. Only when more and more of Internet users start caring deeply about their privacy and what rights they

also expected to be able to record phone calls, intercept and analyze emails and messages and monitor VoIP communication and will be integrated into the system that's already monitoring Internet traffic. The CMS will do this using a direct link to all telecom operators in the country through which the data required will be requested and received.

The scary thing is (yup, we realise we've been saying this a lot in this story) that the CMS is completely devoid of any judicial oversight. The government has refused to clarify the process that will be involved to initiate surveillance against an individual and whether doing so will even require a warrant. There has also been no insight into how long a person will be tracked and what will be done with the intercepted data once it's of no use. All we do know is that the CMS will only be under the purview of the Home Ministry and boy, we sure do know that all politicians and bureaucrats in our country can be trusted completely, don't we?

All of these numbers only stand to prove that the government is very, very interested in what you're doing online or on your cellphone. You will remember Kapil Sibal railing against social networks and how there was a need to monitor them for inflammatory content. You will also remember that earlier this year, a man from Agra was arrested under Section 66 (A) of the IT Act for posting images of Mulayam Singh Yadav and Kapil Sibal on Facebook, images that were deemed to be "communal and inflammatory." Further back, last year also saw the to and fro between

overseas and how easy we've made it for them to continue doing so.

Despite this growing trend according to a study conducted by Professor Kumaraguru and Niharika Sachdeva for IIT-Delhi, 75% of Internet users in India are in the dark with respect to online privacy. The study that covered more than

"Research shows that while globally about 79% of Internet users were concerned about online privacy, that number jumped to 94% when it came to Indian citizens."



C-DOT is the organization responsible for implementing the CMS in India.

10,000 Internet users in India showed that a large majority of them did not read the privacy documents that websites and online services provide and had no idea of their privacy rights and how they could be infringed. However, the hope lies in the fact that Indian Internet users do seem to care more than others about online privacy. Research conducted by Big Brother Watch, a UK based privacy group, showed

have, will this fight gather momentum. As we mentioned at the very beginning, our objective with this story was not to try and satiate your worries with the help of stop-gap solutions or moralize about what's right or wrong, but rather help you understand the context and the state of affairs when it comes to privacy online and how your rights are being infringed upon. We hope we've been able to do that. **■**

WORKSHOP: **PROTECT** YOUR PRIVACY **ONLINE**

The NSA just showed us how limited our online privacy truly is. Here is a small workshop that just might be able to restore some measure of privacy to your current, pseudo-private online life.

Anirudh Regidi

Before we begin, we need a disclaimer of sorts. None of the methods we're listing out here are guaranteed to offer privacy. As we don't have any spies inside the NSA (or any other security agency for that matter) and have no access to any concrete evidence to support the claimed features of the services we will list, we don't know for sure if the methods actually work. What we can say is that steps and services that we'll list in the following article will, in theory, provide

a far more secure and private online life than you previously experienced.

The big question is not how you protect your privacy, but rather, why? What do you hope to achieve? Complete Internet anonymity? Do you just want to hide a bit of, ahem, indiscreet browsing? Are you an activist hell-bent on joining the ranks of Anonymous and the like? The latter is something that we can't help you with, but the rest, well, let's see.

First, here are a list of general guidelines that you need to follow while online.

There won't be much point in worrying about whether Google is reading your Gmail if your accounts are open already compromised is there?

- **Passwords:** Probably the most important component of your online life, the password is much neglected by most. No matter how many times we're told that we need multiple, strong, secure passwords, we don't keep them. Maybe we're lazy or maybe we're just short on memory, who knows? The point is, people who tell you to change



They're always watching. Always.

your passwords regularly are not talking through their hats. You may not realise the importance of multiple passwords till your account is hacked. While your password itself may be secure, it's how the website that you're logging into handles the password that is suspect. Take the recent hacking of Adobe's database; the site was probably one that you trusted with your credentials and maybe you were a bit lax and you used the same password that you use to login to, say, facebook. All the hacker has to do is find your identity online (using your profile information on Adobe's site) and just try your Adobe password on every social network and forum that you're on! We're not saying that Adobe is particularly lax, what we're saying is that if Adobe can be hacked, what about the more risqué forums that you might be frequenting?

- **Two-step authentication:** An essential supplement to your password. If you have this option, enable it. This is easily one of the safest and most secure methods of logging in anywhere. It might be more cumbersome, but trust us when we say this, you'll be thanking your lucky stars the day you discover that your accounts have been compromised.
- **A double-life:** If you're really paranoid about your online life, lead a double life. Create an entirely new online persona, complete with fake address and birthday. Hell, create multiple personas. Use those details as credentials for sites that you would not want linked to your real life.
- **Public Wi-Fi:** Try not to use public Wi-Fi networks to access private and secure data that you would not have

fall into the wrong hands. If you really must use a public network, use a VPN (more on that later), but even that might not be enough.

- **Encryption:** Don't leave sensitive data just lying around. Leaving passwords in Google docs or Skydrive is not the intelligent thing to do. If you really must offload private data, use utilities such as true-crypt to encrypt your info before you upload the data. But remember, the best place to store any data is your memory.
- **Google yourself:** We're pretty sure that some of you do this anyway, but for those who don't, this is not really vanity. If one wants to remain anonymous, one must pride oneself on one's inability to find oneself.
- **Misc. tips:** There's not much else really. Just make sure you understand how privacy works on various sites, don't put any compromising information online and be careful with your passwords.
- **Incognito:** It's best if you browse the web in incognito mode wherever possible. Most importantly, don't sign in unless you really have to. Even for that Google search. Also, enable "Do Not Track" in your browser. Almost every modern browser from Internet Explorer onwards has this feature. This will at least prevent your data from being logged by sites that comply with the request. Bear in mind that many sites do not comply with a "Do Not Track" request so it's not a complete solution.

It's imperative that you understand one thing though, the incognito mode doesn't make you invisible. All that the mode really does is delete



Just because you're wearing a mask doesn't mean you're invisible

browsing and tracking data on the PC that you're working on. All your actual history has already been mapped and tracked by your ISP and any other organization taking an interest in what you're doing.

- **Anti-social behavior:** If you truly value for privacy, stay away from social networks. Facebook for example, with its myriad privacy faux pas is just one of the biggest sources of information on your entire online (and real) life.

Now that we've got the basics out of the way, it's time to move on to the more advanced stuff. If you've implemented the above steps, your online life should already be pretty secure, but, to go that extra mile, here are a set of steps that more advanced (or paranoid) users can try out.

VPN

One of the easiest ways to get tracked online is via your ISP. Anything you do online can, and probably will be



linked back to your IP address, a digital signature of sorts. One way you can get around this is by using a Virtual Private Network (VPN). How it works is very simple. You access the VPN via your ISP, so the ISP knows you went that far, but after that, all your Internet traffic is routed via that VPN provider's servers. Basically, no matter what you're doing or what site you're browsing, all your ISP knows is that you've accessed that VPN and no other site. As you can see from the box labelled "How does the Internet work?", the Internet is nothing more than a collection of interconnected PCs and routers. Each of those PCs (servers in this case) will keep logs of your IP

How does the Internet work?

To understand how to protect oneself, one must understand how the Internet actually works. What happens when you click on that link in your browser?

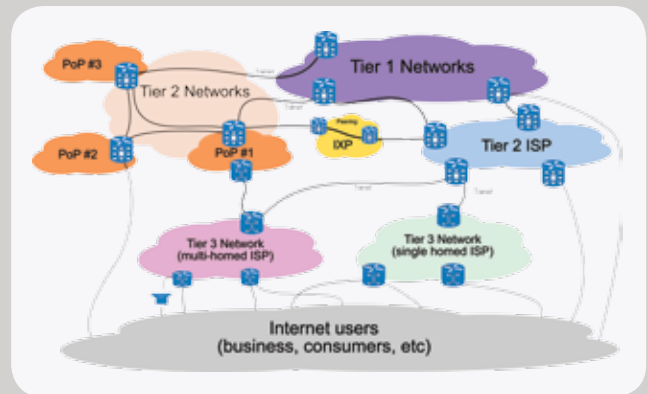
For something as seemingly large and complex as the Internet, it's also surprisingly basic and straight-forward in its operation. After oversimplifying the process considerably, here's a rough overview of the Internet.

Here are some basics that you need to be aware of:

1. **End-points:** The data that you need to access is stored on a PC that is called a server. This could be the place where all the data on www.thinkdigit.com is hosted for example. The device with which you'll access the data from the server is the client. This could be your smartphone, PC or laptop or any other Internet ready device. Both these devices are end-points. The ends of the chain that make up the Internet.
2. **IP Address:** Every end-point / server will use a network card to access the internet and a unique address that's called the IP address. Think of the network card as your cell-phone and the IP-address as your phone number. The IP address itself is not your identity in the same way that a mobile number is not you.
3. **Packets:** All data over the Internet is sent as "packets" of data. Think of it this way, when you click on an image, the data that makes up that image is broken up like a puzzle. Each piece is told where it needs to go and when it gets there, where it needs to fit. When the packet arrives at the destination, it'll find its spot and settle there, when the rest of the packets arrive, the puzzle reassembles itself to give you the image that you requested.
4. **DNS:** Trying to remember phone numbers is hard enough, remembering an IP address even worse. The Domain Name system was put in place to sort out exactly this problem. It's essentially a contact book that keeps track of IP addresses and their associated names. So, www.google.com can be 74.125.239.96 for example. DNS is a Domain Name Server, a server that hosts a database of domain names that can be referred to. Whenever a new Internet connection is setup, the address of a DNS server is also included.

Let's start with a simple address.

1. You open Google Chrome and type www.thinkdigit.com in the address bar.



2. Your PC translates that data into a request that is sent via a router to your local ISP, which will try to contact a DNS server to figure out the IP address of www.thinkdigit.com.
3. The local ISP will have a regional ISP above it. The regional ISP will in-turn contact a Network Service Provider (NSP) that will in-turn contact a Network Access Point (NAP) or IX (Internet exchange). All these ISPs, NSPs and IXs are basically routers. Once the DNS tells the system the IP address that you're looking for, all these routers will try to find that IP address. Each router refers to a routing table, a chart that lists the IP address that the router is responsible for and a default route to the next router in the hierarchy if the required IP address is not listed.
4. Once the addresses are resolved and the server located, your request is finally submitted and the server responds with data. That data is sent in the form of packets (read in detail above). What's interesting here is that the packets don't return to your client via the same route that your request arrived at the server. These packets will discretely pick and choose the most optimal way to arrive at your client and will almost always arrive via multiple routes. This system ensures that the Internet pathways don't get clogged and that a balanced data flow is maintained.
5. That's it! The packets arrive at your client. They're already tagged with the information required to reassemble them and your browser automatically collates the data and interprets it. All this magic happens in a matter of milliseconds.

address, where the request came from and where it was sent. The only way to protect your anonymity online is by making sure that those logs are not kept. VPNs that claim to be secure do exactly that, they delete logs.

If someone wants to find the source of a request that they want to trace, they'll be able to trace it as far as the VPN provider, but no further. Use multiple VPNs and you further enhance your security.

VPNs are also an excellent way to bypass censorship and also to access con-

tent on region-restricted sites including iPlayer, Netflix and Hulu. Do remember that you might very well be breaking the law here and you're on your own if you do take such a risk.

Therefore, to truly take advantage of a VPN you need to access a VPN provider that keeps no records. There is no point in taking steps to protect your privacy if your VPN logs your every move and then sells it off to the highest bidder is there? Another problem is that many of the good VPNs require you to pay a certain sum

of money for their services. Of course, if you can put a price on your privacy, that's where you start.

Proxy servers are very similar but they're not the same thing. Proxy servers only act as intermediaries between you and the rest of the Internet. VPNs act as intermediaries and encrypt your traffic at the same time. Do note that just because a VPN or proxy server is popular doesn't mean that it's good. Consider <http://hidemyass.com/>; it was recently accused

of divulging the details of a Lulzsec member to the authorities.

Here are some of the more reputable VPNs that we know of:

- <http://btguard.com/>
- <https://www.privateinternetaccess.com/>
- <http://torguard.net/>
- <https://airvpn.org/>

VPNs are only good if they're up and running. As a user who is worried about security, it's important that you ensure that you're actually connected to the VPN at all times. Of course, you can't keep track of the connections at every moment of the day, so you can use utilities such as *VPNNetMon* and *VPNCheck* to keep track of your connection and ensure that you're connected at all times.

One more thing you need to monitor is the DNS server you're connected to. For a VPN to work, you must be using their DNS servers as well and websites such as <https://www.dnsleaktest.com/> will let you verify the DNS networks that you're connected to and have access to.

Browser plug-ins

VPNs and proxy-servers are good, but there are some simple browser plug-ins that can make your life a whole lot more private. Here are some of the more useful ones.

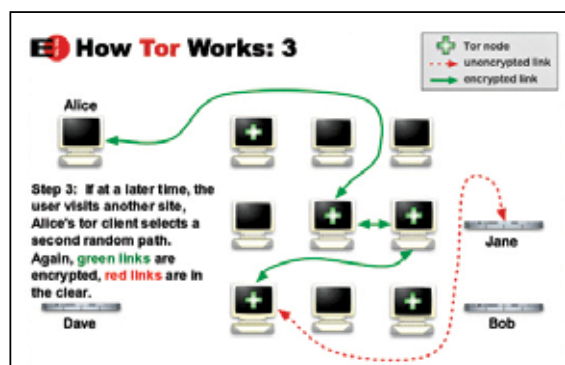
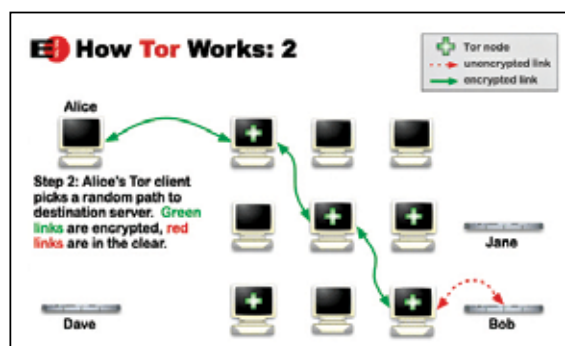
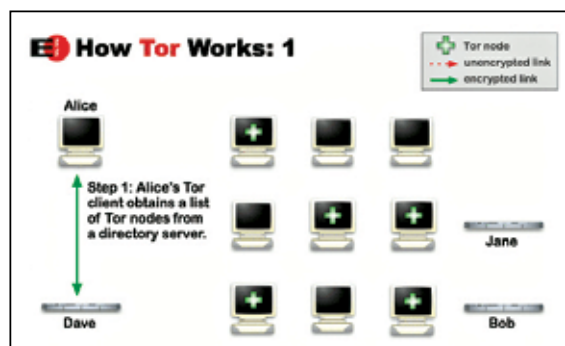
- **HTTPSEverywhere:** This plug-in forces websites to use the HTTPS protocol where possible. Of course, government agencies and other such agencies will probably still track you down, but for the average joe, this is enough. (<https://www.eff.org/https-everywhere>)
- **DoNotTrackMe:** An interesting plug-in, this plug-in enables the DoNotTrack feature wherever possible. It does its level best to protect your information from the Internet. (<https://www.abine.com/dntdetail.php>)
- **Ad-Block Plus:** Almost everyone who is even vaguely geeky has used this plug-in. Now this isn't a true privacy plug-in per se; it blocks out almost all ads and in effect, might save you from the hassle of accidentally clicking on an ad and leaving a tracking cookie on your system. (<https://adblockplus.org/>)

TOR

This network will probably require an entire article on its own. The TOR network is seen as the bastion for privacy seekers and while it does draw a fair share of flak for being an enabler for the truly dark and demented side of the Internet (child pornography, drug-dealing and other such nefarious activities), it does have a reputation for being the most secure and anonymous network the world has yet seen. This is supposedly one of the very few networks that the NSA hasn't cracked yet.

TOR works by randomizing the route your Internet traffic takes by running it through the TOR network and erasing all traces (logs) along the way, effectively giving you anonymous access to anything.

TOR can be downloaded from <http://dgit.in/TTORR>. Just be sure to follow all the instructions on that page.



Secure file-sharing and messaging

Sharing files online can be an issue if you're really worried about privacy. While services such as drop-box and Skydrive are very good, they store the information online, meaning that there is a possibility that the data can be hacked into. The same goes for all your messaging and chat needs.

Two services can come to your aid here, both provided by the BitTorrent network.

- **BTSync:** This service uses the BitTorrent protocol (P2P) to sync files between PCs or servers. The system doesn't use any third-party servers to store or mediate the data transfer, making the connection as secure as possible.
- **BTChat:** This service is very similar to BTSync, the only difference being that the protocol is used for chatting and messaging rather than file transfer. The service is still in the testing phase though and you can apply for access to the alpha at <http://dgit.in/16STiBt>.

Use your head

Using these basic tools and following the steps that we've listed out you'll, be a ghost online. Just remember that these are only tools and are only as good as the person who makes use of them. Even the world's greatest hackers have been unmasked and they've been unmasked by old-fashioned police work rather than by some super-geeky sleuth who's voice is yet to break. Regardless of how you're trying to remain anonymous, there's a more than even chance that you can be found if someone really wants to find you. Always work under the assumption that you can and will be tracked and conduct yourself accordingly. Don't do anything that you'll regret.

More importantly, don't use these tools to engage in illegal activities and expect to be safe. Even the most secure VPNs have been known to cooperate with authorities when it comes to taking down real criminals. **[E]**



AMD GPU14 TECH DAY: NEW BEGINNINGS

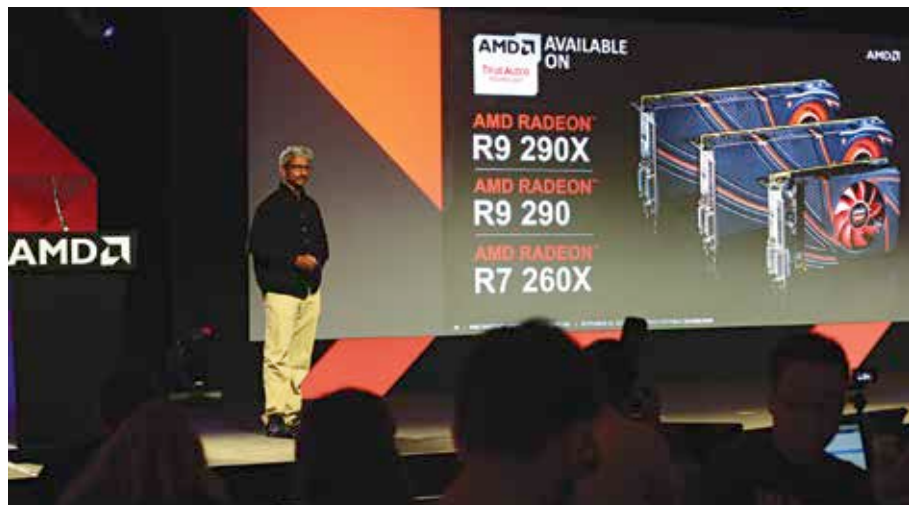
There's a Radeon revival on the horizon with new GPUs, new features, backed by a bold new AMD. Excited?

Jayesh Shinde

jayesh.shinde@thinkdigit.com

At the beginning of the year, AMD showcased the new Radeon 8000 series GPUs at CES 2013, on a few partner products (all either laptops or ultrabooks), all made from the existing chips found on the Radeon HD 7000 series cards. As the world waited frustratingly for a tangible graphics update on AMD's Radeon desktop lineup, it never materialized around their speculated launch dates. A lot of gamers blamed Grinch, but he wasn't really to be blamed for not delivering shiny new Radeon GPUs to graphics-starved PC gamers.

While we were all contemplating whether AMD had overshot another one of its deadlines – and the chip maker's rather infamous of doing it – something big was brewing within the company. We got an early sign of things to come during the middle-of-the-year next-gen gaming console sneak peek (remember the PS4 and Xbox One announcement events?). Was it all a big coincidence that AMD managed to convince not just Microsoft but also Sony to become the hardware platform of choice for the next wave of gaming consoles (including the Nintendo Wii U released late last year)? In one fell swoop, AMD positioned itself at the centre of traditional console gaming, and we wondered what more the company hid



Raja Koduri speaking about AMD's new GPUs, and introducing Mantle – a new GPU API

behind closed doors. Tech and products that would still have to wait before they were revealed to inquisitive, rejoicing, and uncompromising eyes.

However, in Hawaii of all places, AMD finally rolled back the curtains and gave the world a glimpse of what it's been working on for the past several months.

AMD Radeon R9 and R7 series GPUs

For those of us who wondered when AMD was going to finally launch its 8000 series of graphics cards, well there's some news for you. There will be no 8000 series of cards, as AMD's changing the nomenclature for its GPUs. That's right, the four digit number naming convention wasn't sustainable "with an eye on the future," according to AMD, and let's face it the "HD" tag in the GPU names was getting old, too. They not only revealed their new GPU naming convention, but AMD also unveiled the much-anticipated successor to the HD 7990, the Radeon R9-290X – AMD's

fastest graphics card yet – and Radeon R9-290, both of which sport a brand new silicon architecture inside. There's also the R9 280X and R9 270X which when coupled with the previous two cards complete the top-end, aimed at uber gamers and priced highest accordingly. At the other end of the spectrum lies AMD Radeon R7 series comprising Radeon R7 240, R7 250, and R7 260X, which is targeted at budget to average gamers who desire more value out of their buck.

The AMD Radeon R9-290X is the flagship GPU of AMD's 2014 lineup, and it's a beast of a device. However, the entire Radeon R9 290 series sports some common features like over 5 TFLOPS of computing horsepower, over 300 GBps of memory bandwidth, ability to process 4 billion triangles per second, and they have more than 6 billion individual transistors. Another peculiar feature of all the new AMD Radeon R9 and R7 series of GPUs is that none of them have external CrossFire – neither the ports or the bridge. All of that's being taken care of through



New AMD R9 and R7 series GPUs are out!



Full-On Sony

Big things come in small packages. Sony's compact Alpha cams insist on full-frames. Read more <http://dgit.in/full-onSony>



Car Connect

Toyota seems to be having trouble modifying its in-built stereo to keep up with mobile devices: <http://dgit.in/gaddinubluetoth>

Tomorrow's tech

the PCI-E lanes on the motherboard. Good move, we think, and long overdue.

It's not just about launching refreshed graphics cards but also working on tech that matters to the gaming fraternity, and to elucidate the point, AMD's Raja Koduri outlined three important pillars of the company's 'Radeon is Gaming' offerings. It's about AMD's GCN (Graphics Core Next) Architecture, TrueAudio technology, and Super high-resolution gaming. Most of the specifications improvement in the R9 and R7 series GPUs are all thanks to AMD's GCN Architecture, which also claims to provide enhanced DirectX 11.2 support and ramp up on energy efficiency. In its quest to be the definitive gaming platform out there, AMD's also taking the leap to fully support UltraHD 4K displays for enhanced visual brilliance – along with the multi monitor EyeFinity technology that AMD graphics cards support out of the box. With a Catalyst Driver update, the UltraHD 4K display support will also be rolled out to current GCN enabled AMD graphics cards.

AMD TrueAudio Technology

Another integral part of the new AMD Radeon graphics offering is the company's TrueAudio Technology. With a lot of impetus given on enhancing visual, 3D graphics as far as GPUs are concerned, it's about time that someone did something about optimizing and enhancing the audio experience while gaming – a key component for true in-game immersion. What AMD tries to deliver with



Radeon R9-290X:
AMD's new flagship

TrueAudio is a fully programmable audio engine for game developers to work with. While AMD hopes to “revolutionize game audio” with TrueAudio Technology – we'll just have to wait and watch – a game that exploits this feature of the DSP will be able to reproduce more realtime voices and channels, letting you perceive a greater degree of directional audio over any output. Well, recreating complex positional sound with audio functions isn't something new, what is new is AMD's approach to make the whole process independent of the main CPU (to a large extent). The company claims that only 10 per cent of a game's CPU resources are traditionally allocated for audio processing, and with TrueAudio it's trying to make real-time CPU-independent audio processing available for games to exploit.

According to AudioKinetic – they design audio middleware – traditionally it's either the CPU or a dedicated DSP (assisted by the CPU) that processes in-game sound on the fly, but that isn't

the case with AMD TrueAudio. Digit was present at the event listening to AMD's partner's sound demos across 24 channels squeezed into a 7.1 setup, and the directional and positional sound was definitely impressive; even on a stereo demo, the same audio clip didn't deteriorate overwhelmingly, retaining a significant amount of the directional audio processed on-the-fly on a Radeon R9 series GPU.

This new TrueAudio technology will be made available on AMD Radeon R9 290X, R9 290 and R7 260X GPUs only (for now). All three GPUs claim to have three dedicated DSP cores for audio processing in their attempt to deliver enhanced audio immersiveness. Upcoming games like *Thief*, *Murdered Soul Suspect*, *Lichdom*, *Sonic & All Stars Racing Transformed*, and of course *Battlefield 4* are all developed to exploit AMD's TrueAudio tech, if you're gaming on a supported Radeon GPU, obviously. We can't really comment on audio performance conclusively without testing one of these TrueAudio enabled GPUs, but all signs indicate that the era of superior in-game audio and audiophile gamers is about to take off real quick. That's got to be good for gamers, developers, and the industry as a whole, right?

Project Mantle

This is AMD's silver bullet. Mantle is AMD's solution to something that developers have been “complaining about” for a long time now – flip to Page 113 to know more about this rant. It's a low-level API in its GCN architecture that's different from DirectX, DirectX3D, OpenGL, etc., allowing game engines to knock on the GPU's hardware directly – demand GPU memory access – reduce CPU draws and boost overall performance. More importantly, with AMD's APUs (and GCN) debuting on the upcoming Xbox One and PS4 consoles (and a lot of Radeon GPUs down the line), it offers game developers a one-stop solution to code and port their game engines smoothly across platforms and devices. This definitely throws open interesting possibilities for PC gaming, and we'll be watching AMD closely to see how it all unfolds in the near future. **[1]**

MANTLE BENEFITS

- ▲ Enables 9X more draw calls per second than other APIs by reducing CPU overhead
- ▲ Enables higher graphics performance with direct access to all GPU features
- ▲ New rendering techniques
- ▲ Leverage optimization work from next-gen game consoles to PCs

Works with all Graphics Core Next GPUs

MORE WITH MORE

AMD

Graphics Applications
Mantle API
Mantle Driver
GCN

Project Mantle claims to offer developers unrestricted access to the GPU's full potential



Toren

Toren is a game by an independent company based in Brazil called Swordtales. Read the review of the game here: <http://dgit.in/1afeSjw>



Monaco Lights

Monaco gets a Halloween update. Read the article for details: <http://dgit.in/17fbSFv>

BARSOOM, OR BUST

Future missions to Mars

Prakrit Dhondiyal
readersletters@thinkdigit.com

*"Imagination is but another name for
super intelligence."*

— Edgar Rice Burroughs

So said the man who became the first literary pop cultural influence on the world to tell us what life could be like on the Red Planet. Burroughs' Barsoom series sparked a flame in the mind of countless people worldwide (in quite a few languages!) and arguably helped pave the way to the way all of us look at our celestial neighbour today. Carl Sagan, a well-known scientist and writer admitted to reading about John Carter's adventures as a kid. Ray Bradbury, Arthur C. Clarke and Robert Heinlein were also followers of Burroughs.

Since the 6th of August, 2012, there have been three Orbiters surveying the planet: Mars Odyssey, Mars Express, and Mars Reconnaissance Orbiter and two scientific rovers on the surface of Mars beaming signals back to Earth (Opportunity, and Curiosity of the Mars Science Laboratory mission). That being said, humanity seems to have very little interest in stopping. There are several excursions being planned at this very moment to



NASA's Mars Rover Curiosity

ultimately place a human being on the surface of this Planet of 'War'.

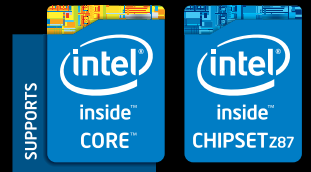
A long time ago...

We have had 38 missions concerning Mars spanning the Space Programs of four countries (The United States, The USSR, Europe and Japan) out of which 16 missions have been successful. This list excludes two projects:

- The Mars 6 Orbiter/Lander project of 1973 where the occultation experiment produced data and Lander failure on descent. (Roscosmos - USSR)
- The Mars Express Orbiter/Beagle 2 Lander mission of 2003, where the Orbiter imaged Mars in detail but the lander was lost on arrival. (ESA)

These missions have provided us with over several thousand images and a little less than 30 Terabits of recorded data to

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GAMING DEVICE PORT



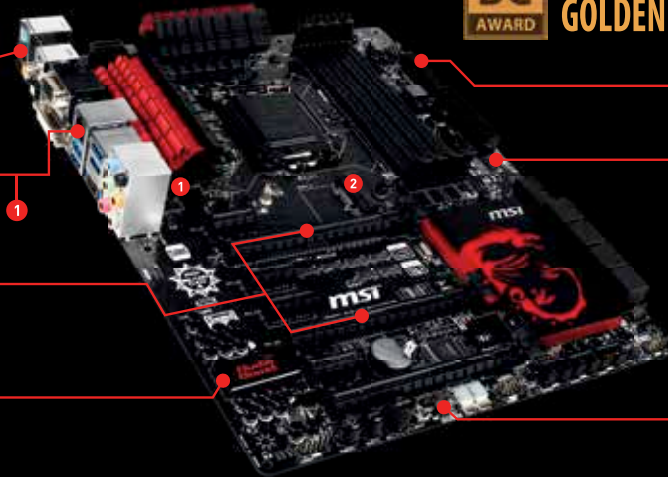
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AUDIOBOOST



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How do black holes get so massive?
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<http://dgit.in/1a4mQ0g>



First evidence of comet strike

A team of South African scientists discovered the first evidence of a comet entering the atmosphere and exploding 28 million years ago. <http://dgit.in/19jOrGV>

Successful Space Missions to Mars since 1964

Launch Date	Name	Country	Reason
1964	Mariner 4	US (flyby)	Returned 21 images
1969	Mariner 6	US (flyby)	Returned 75 images
1969	Mariner 7	US (flyby)	Returned 126 images
1971	Mars 3 Orbiter/Lander	USSR	Orbiter obtained approximately 8 months of data and lander landed safely, but only 20 seconds of data
1971	Mariner 9	US	Returned 7,329 images
1973	Mars 5	USSR	Returned 60 images; only lasted 9 days
1973	Mars 6 Orbiter/Lander	USSR	Occultation experiment produced data and Lander failure on descent
1975	Viking 1 Orbiter/Lander	US	Located landing site for Lander and first successful landing on Mars
1975	Viking 2 Orbiter/Lander	US	Returned 16,000 images and extensive atmospheric data and soil experiments
1996	Mars Global Surveyor	US	More images than all Mars Missions
1996	Mars Pathfinder	US	Technology experiment lasting 5 times longer than warranty
2001	Mars Odyssey	US	High resolution images of Mars
2003	Mars Express Orbiter/Beagle 2 Lander	ESA	Orbiter imaging Mars in detail and lander lost on arrival
2003	Mars Exploration Rover - Spirit	US	Operating lifetime of more than 15 times original warranty
2003	Mars Exploration Rover - Opportunity	US	Operating lifetime of more than 15 times original warranty
2005	Mars Reconnaissance Orbiter	US	Returned more than 26 terabits of data (more than all other Mars missions combined)
2007	Phoenix Mars Lander	US	Returned more than 25 gigabits of data
2011	Mars Science Laboratory	US	Exploring Mars' habitability

help us understand the planet, its history and hopefully its full potential to help us further our knowledge about what's truly out there.

The National Aeronautics and Space Administration:

NASA has several projects planned over the next seven years to explore Mars. Its present final stage being to set a mechanical rover on the planet's surface in 2020 in pursuit of scientific knowledge. The commissioned projects in the Mars Space Program are:

- **MAVEN: (2013-2014)**

The Mars Atmospheric and Volatile Evolution (MAVEN) is a reconnaissance mission currently in the works. It involves placing a satellite in Mars' orbit to record data as a way of discovering the history of the planet's atmosphere. One of the features of the MAVEN project is to provide information about the rate at which atmospheric dissipation occurred on Mars. This has several

possible plus-points. The first being that the similarities between our planets may offer a solution to our own environmental issues back here. The second (on a more ideological level) is that we may have a better idea about terraforming Mars to suit our own needs so that we may, at some time in the future, be able to consider it as an option for colonization.

MAVEN is set to launch sometime between 18th November and 7th December, 2013 and be placed in Mars' orbit around 22nd September, 2014.



MAVEN

- **InSight: (2016)**

The Interior Exploration using Seismic Investigations, Geodesy and Heat Transport. A mouthful of a name, InSight is a project that may just be able to truly explain Mother Nature's existence. The project involves landing a geophysical lander on MARS to study the interior of the planet. Comparing that data with what we already know about our planet, InSight may bring us one step closer to eventually proving (or maybe even disproving) the big bang. InSight is programmed to dig its sensors beneath the surface of Mars, detecting the remnants of the processes of terrestrial planet formation, as well as measuring what NASA describes as the planet's "vital signs": Its "pulse" (seismology), "temperature" (heat flow probe), and "reflexes" (precision tracking).

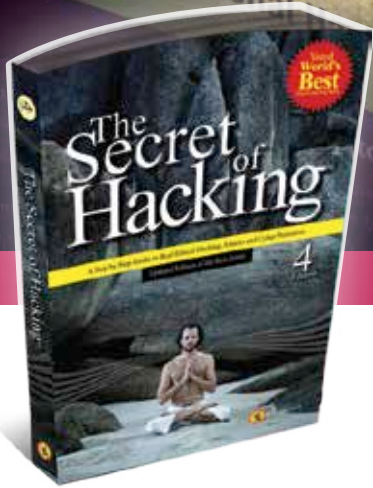
InSight is scheduled to launch sometime in March 2016 and land on the planet's surface in the September of the same year.

- **Mars 2020:**

The Mars Rover program set for 2020 is one in a long line of attempts to successfully perform a mission of robotic exploration of Mars. Not much is confirmed about this mission since its budget depends on the future success of NASA. To keep mission costs low and decrease the risks this highly-capable rover would ideally be based on NASA's successful Mars Science Laboratory design, including the guided entry and sky-crane landing system that successfully proved its worth when it carried the Curiosity rover to the planet's surface back in August, 2012.

The European Space Agency and The ExoMars Program: (2016-2018)

The ESA is a joint effort of twenty states in the European Union. It was formed in 1975, by effectively merging two older organizations: ESRO (European Space Research Organization) and ELDO (European Launcher Development Organisation). Since then, they have had their share of highs and lows as space explorers. However, their ExoMars Program has a high possibility of giving them (and through them, us all) a huge push in the right direction.



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Author's Brief Profile

Manish Kumar, PHD Information Security—UK
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Manish Kumar is a CISO, Security Researcher, author, speaker and a life-long entrepreneur. He is Co-Founder of Leo Impact and is known for creating creative ideas & found logical solutions. He was appeared on NDTV, CNN Money Online, etc. He has also been worked with the Various Army & Govt. Departments like MI, SI, CAB SEC. CERT, etc and various banks including American Express & SBI group.



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Exoplanet 1000+

The number of discovered Extrasolar planets has risen above a thousand. What are Exoplanets? Read On: <http://dgit.in/1fUYmnc>



Telescope in the Desert

Construction of a massive telescopes in desert regions. Follow the link to see more <http://dgit.in/1bVWXc0>

The ExoMars Program currently consists of two future missions, the Orbiter and the Rover. The program as a whole is dedicated to answering the questions raised about the existence of life on Mars. The next mission in this program is the Trace Gas Orbiter.

The ExoMars TGO a project being carried forward by the ESA in collaboration with Roscosmos (The Russian Space Program) in 2016. It is a satellite which is being sent to Mars' orbit to detect the trace amounts of gases minutely detected in the atmosphere of Mars by previous missions. The measurements carried out by the Orbiter will provide evidence about the location and sources of these gases. These locations could then be targeted as possible landing sites for future missions. The Orbiter will also function as a signal booster to any future manned and unmanned rovers sent to the planet's surface. As a result of NASA's Electra technology (which is installed in the TGO) the satellite can transmit accurate Doppler data pinpointing the rover's position on Mars' surface. The TGO also uses its nadir-pointed antennae (antennae that are pointed straight down at the surface) it transmits UHF coverage to the landers and rovers on the surface which do not have adequate radio power to communicate directly with Earth.

In the wake of the anticipated success of the ExoMars Orbiter program, the ESA also have the ExoMars Rover program in the pipeline. The launch date has been tentatively set sometime in 2018 The Rover has several goals, the most important of which is exobiological and geochemistry research. The Rover is made to autonomously drill 2 metres



Colonizing Mars. Science-Fiction made real?

into the Martian crust while investigating the borehole wall mineralogy, and collect small samples. These samples will be delivered to the analytical lab inside the Rover. The sample will be crushed into a fine powder. By means of a dosing station the powder will then be presented to other instruments to perform detailed analyses of these samples. Quite the Asimovian procedure.

ISRO's advent to martian space:

Moving a little closer to home, the Indian Space Research Organization is trying to make its own headway into research on the red planet. ISRO's Mars Orbiter Mission (MOM) is scheduled for launch between 28th October and 16th November this year.

The MOM has certain technological and scientific objectives (though the former seem to outweigh the latter, probably considering how new ISRO is to the interplanetary missions). As per ISRO's official website, they are:

Technological objectives:

- Design and realisation of a Mars orbiter with a capability to survive and perform Earth-bound manoeuvres, cruise phase of 300 days, Mars orbit insertion / capture, and on-orbit phase around Mars.
- Deep space communication, navigation, mission planning and management.
- Incorporate autonomous features to handle contingency situations.

Scientific objectives:

- Exploration of Mars surface features, morphology, mineralogy and Martian atmosphere by indigenous scientific instruments.

Have to say, it sounds very attractive in writing. But missions like the MOM are only as good as the final goal, which also hugely depends on the next big step we take towards it. However, considering we're at the eve of this launch, let's hope there's more to come. It's about time Indians began colonizing off-planet.

Dennis Tito of Mars (And other stories)

Here's hoping he at least christens the vessel Barsoom. Admit it, at least some




Dennis Tito - Space tourist

of you laughed when you heard about this guy offering a (possibly one-way) flyby trip to Mars and back, and said "Who's going to take this bozo seriously?"

Answer: At least 200,000 people. Yes, at least. The requests are still flowing in. For those who come in late: Dennis Tito is a multi-million-dollar American Engineer. He is best known for spending about twenty million dollars on a trip to the International Space Station simply to satisfy his need to see space, thus becoming the world's first Space Tourist. Now he's asking for people to join him on his trip to the red planet. He's started his own non-profit organization called Inspiration Mars and is oddly tag-lined A Mission For America. One can imagine the JLA theme song playing while he and his team walk up the ramp into the spacecraft in slow-motion, wearing spacesuits and carrying helmets under their arms.

Adding to Dennis Tito's urges and make this a mix is the Mars One project, which is offering to train a human crew to go on a one-way trip to Mars to colonize in 2023. The search for Astronauts began in April 2013 and more than 78,000 heads worldwide signed-up for the selection programme within two weeks of its launch.

*"Yes I'm an alien
When I'm touching the earth
Call me a spaceman
When I travel the universe...
...Call me a spaceman."*

– Mr Spaceman, by Hardwell. 

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)



NASA'S SPACE PEN MYTH

Remember the urban legend claiming NASA spent millions of dollars on a pen that works in zero-g when they could've simply used a pencil? (Yes the one seen in 3 Idiots.) It turns out pencils can't be used in space but NASA didn't really spend millions on creating such a pen. Read on:

<http://dgit.in/wwspapen>

THE 10 MOST EXPENSIVE VEHICLES TO OPERATE

If you thought the Bugatti Veyron was the most expensive you'd be wrong. The Apollo lunar roving vehicle had a cost per mile of \$5.9 billion! From supercars to super-carriers, when it comes to burning dollars faster than gasoline, these 10 vehicles are the absolute worst. Check them out:

<http://dgit.in/wwexpn10>

THE TRUTH ABOUT CHRISTOPHER COLUMBUS

Was old Chris Columbus a brave adventurer and explorer who discovered the new world? Or was he sex slaver, mass murderer, and champion of sociopathic imperialism? In typical Oatmeal fashion, this post attacks this illusion and questions the existence of Columbus Day:

<http://dgit.in/wwchrisc>

US SHUTDOWN, IN LEGO

By now you've probably read the headlines of the US government shutdown. If you've been wondering how an organization like the government can shut down, this article will explain it all via Lego:

<http://dgit.in/legogo>

[Extreme Tech Corner]

THE MACHINE STOPS



What will happen if vital technology based services stop? Services that have almost been raised to a god like status. Be it the internet, the electricity grid, fossil fuel supply we're supremely dependent on them. Read this chilling account. <http://dgit.in/wwend1>



Meet the 'Terminator' polymer

The material can spontaneously 'heal' itself in a matter of two hours. Sounds freaky? It is. The material uses an elastomeric matrix – a network of complex molecular interactions that will spontaneously cross-link to "heal" any break. Check it out:

<http://dgit.in/wwtermi>



Sony's PS4 is made this way?

It seems the new PS4 is made with the blood and tears of blackmailed student labourers who were told to work as unpaid "interns" in the Foxconn factory. The students were told that if they did not accept the position, they'd lose 6 course credits, fatal for their graduation.

<http://dgit.in/wwslavez>



NVIDIA's working on a 64-bit Tegra 6 chip?

After Apple unveiled its 64-bit chip (the benefits of which are still not very clear), NVIDIA doesn't want to be left behind. It seems Project Denver is the 64-bit processing core ready in early 2014 as part of the Parker SoC. Read more:

<http://dgit.in/ww64beet>

STEALTH COPTERS OF 2030



In the not-so-distant future, U.S. special forces [marines who use boats, night vision and SUVs to go after enemies] may be carried into combat by quiet, ultra-fast helicopters. See the US Army's stealth choppers of 2030. <http://dgit.in/wwchopr>

CRACKING SNOWDEN'S EMAIL PROVIDER

As the F.B.I. pursued Snowden they began a four-month tangle with law enforcement officials ending with shutting his decade-long business and becoming an unlikely hero of privacy advocates in their escalating battle with the government over Internet security. <http://dgit.in/wwprivacy>

ALL THE DOPE ON ANDROID'S NEXT



By the time you read this, official news about the Nexus 5 might have already been out. If not, here's something to tell you everything you need to know about the device and also the next major revision of Android 4.4 KitKat. <http://dgit.in/wwnexus5>

SAVIOR OR DOOMBRINGER?

AdTrap was invented by Chad Russell and Charles Butkus to "change" the internet, but also has the potential to ruin it. It's a white box to hook up between your modem and wi-fi router to block data from ad networks before it reaches your computer. Read more: <http://dgit.in/wwoads>

The thrill is gone

The element of surprise is dead when it comes to upcoming tech launches and there's only the rumour mill to blame for it. But are all these "accidental" leaks from companies, really accidental?

- By Vishal Mathur

The new iPad (or whatever they finally call it - iPad 5?) will be a disappointment. No, I am not jumping the gun, and neither am I pro or anti any platform or brand. All I am saying is, once the smoke settles, we'll all be left feeling something missing - the great feeling of being pleasantly surprised.

There was a time when launch events were full of surprises, and a first look at the product that was being shown off for the first time. All of us remember the excitement and anticipation when Steve Jobs walked on to the stage right? And it's not just for Apple products, all of Nokia's N-series smartphones were received with the same amount of warmth and excitement. Simply put, we always expected to see something new, our eyes searching for any hints of what was to come, fixated on the man so to not miss the big moment and letting our imaginations run wild about what sorcery the new product could do.

I have felt this new found disappointment many times, but actually properly noticed it when the iPhone 5 was unwrapped. The final product had been leaked so many times before (most correct images, mind you) that there was nothing new left anymore. The response to all that was "okay", before moving on to other things. Mind you, just okay.

Now, even the most earth shattering announcement gets a shrug and a pout. And there is a reason for that: all the leaks / rumours / 'reliable' rumours that are doing

the rounds on the Interwebs on a daily basis. We pretty much knew what the Galaxy Note III would look like. The Galaxy SmartWatch has been subjected to so many "leaks" that it would almost be nauseating to look at it when the covers come off. Oh well, the Nexus 5 has apparently been "accidentally" leaked too. So, there goes that surprise.

For the company, that is a very big moment. Something they look forward



to, a special moment. And that is true for all brands. Like the birth of a child, if you may. But the people they are addressing are already so sick and tired of hearing about it, the response is possibly of indifference.

We pretty much know what the iPad's successor will look like, considering the Australian teenager, Sonny Dickson, is out with leaked pictures of the new iPad. From the leaked images it looks like it's going to be 2mm shorter and 15mm slimmer than its predecessor. Now, whoever has the misfortune of being on the stage to unveil the new

iPad, will have to deal with the rather frozen expressions of the audience.

So why and how do these guys do it? Almost every time, the news is "confirmed" by some nameless "sources". Even the FCC filings are scanned for product hints every night, by some people in the media profession, before they go to bed. The latest trend is to keep an eye on what the likes of Foxconn are making and shipping and then to assume what is going to be launched. Today's latest is the shipment of packages to Apple, marked "set top boxes". Inevitably, everyone is on it like hungry creatures, assuming that the next generation Apple TV is on the way, and laughing at anyone who has the current Apple TV.

Coming back to the new iPad. Leaked images of the shell have been able to confirm that it will likely continue with the same screen size and resolution (Retina), while also sneaking in the Touch ID sensor (debuted on the iPhone 5S) within the Home button. A 128GB model is an absolutely certainty, but whether it'll sport the same A7 chipset as found on the iPhone 5S or go one up seems to be the only mystery. By the time you read this, all will have been revealed.

But the point is you won't find me circling the launch date with a red marker, with utmost immediacy. I'll have seen too many leaked images by then. Why can't we get the element of surprise back? Maybe we can. Maybe we can't. Mostly because people writing the "leaks" possibly believe it gives them some sort of bragging rights.

DO YOU REALLY OWN YOUR PHONE?

The smartphone business relies on convincing consumers to dump their not-so-old devices, broken or not, for the latest offerings. This only fuels this consumerist pattern we've fallen into. Read Ugo Vallauri's insight to change your mindset about considering electronic devices disposable. <http://dgit.in/wwphph>

SPACEX - THE FUTURE OF NET COMMUNICATION

Elon Musk's commercial space company, SpaceX just launched a Falcon 9 into orbit carrying the CSA satellite, CASSIOPE. The satellite's payload includes Cascade, a prototype for a super-fast space-borne file-transfer system – a digital courier service. <http://dgit.in/wwbum>

THE 9 LEAST COMPETENT JEDI

Masters of the Force and capable of mind tricks it seems the weren't very bright. From Qui-Gon Jinn to Obi-Wan Kenobi, this articles details the mind-numbing stupidity some Jedi display. Stay back at the Academy, some should. <http://dgit.in/wwdumbj>

STORY OF AN INTERNET CRIMINAL MASTERMIND

This is the story of 29 year old American named Ross Ulbricht who operated a billion dollar illegal empire out of a San Francisco coffee shop. What was his crime? He sold drugs like heroin, cocaine, meth, molly, and LSD through the dark web. Here's how he did it: <http://dgit.in/drglord>

Google, put down that Kit-Kat

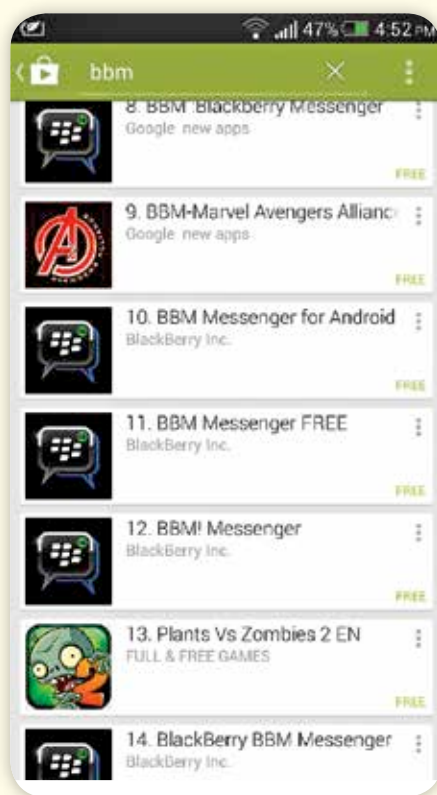
The Play Store is a mess, uncurated mess of apps, many of which have no right to be there. Kids especially can get into a lot of trouble if they're not careful. Here's why.

- By Vishal Mathur

After the BBM app leak on Android store last month, it was inevitable that BlackBerry would face a backlash for not doing things properly and many "experts" quickly followed up with the "I told you so, routine". However, no one really bothered to go into what really was the root cause of the issue. I am sad about this too, but please allow me to burst the bubble – the real cause of this problem was Android. Specifically the Play Store.

While the entire episode with BBM for Android was unfolding, one thing that got highlighted was the amount of fake apps on the Play Store. Most Android users would assume that the apps on the Play Store would be fine to download, all tested and approved by the organization that many assume as the saviour of the earth - Google. However, most of us who are in this line of work know that isn't the case. A simple search for BBM on the Play Store, on the actual launch date, revealed a bunch of fake apps. Most had the listing icon as the actual BBM icon, which would seem genuine to almost any unsuspecting user. Adding the cherry on top of this poisonous cake was the fact that the developers were listed as BlackBerry Inc. and Google new apps. The horrors don't stop there, if you actually open the app page, you'll see screenshots from what is possibly the beta version of BBM.

This discovery led to another discovery - the Play Store is teeming with apps that you wouldn't want your child to see or use. It looks like there is no control over what



goes live on the Play Store, and some of those insensitive apps might even make it to the Trending apps list! Imagine what would happen if your kid navigates to the Play Store in search of a game? He's not going to find what he wants and will probably be inundated by fakes anyway.

This does make us wonder - will Google ever clean up the Play Store? It has always claimed the moral high ground by being an

"open" platform to Apple's so-called "closed" platform. But, since it's never a good idea to vote for censorship regarding content, the simpler way would be for Google to make it easier for parents to change the content restrictions on the device. At the moment, they are there buried deep inside the settings menu, but surely most first time Android users cannot be expected to figure them out.

Personally, in this battle, I believe Windows Phone has the best model for the other stores to follow. Of course, the Windows Phone Marketplace is not really teeming with apps the way the Play Store and App store are, it's still implemented a better approval system that ensures that the apps that are put up are what they claim to be. An advantage of arriving late to the game we suppose.

We don't really want to get into an argument regarding the merits (or demerits) of any particular application store. What we are trying to say however is that free stuff is always nice, but there needs to be a system of checks and balances somewhere in the system. Companies need to be more responsible for the services they provide and they need to get serious about it.

While some may argue that Microsoft has the luxury of indulging in this "censorship" due to the limited number of apps they probably receive in the first place, one must remember that companies like Google are more than well-equipped to handle this situation. They just need to decide to do it.

(worldview)

YOGSCAST

Minecraft and multi-player comedy gaming coverage with a drunken dwarf and a handsome spaceman! What else



could you ask for!? Join them as they laugh their way through the best, the worst and the funniest indie games, Minecraft mods, mini-games and adventure maps. Their other Yogscast buddies are worth checking out too.

<http://dgit.in/wwwyogs1>

(QR Code)



For a list of all the links from this section, head over to <http://dgit.in/wwwnov13> Or point your phone to the QR code above

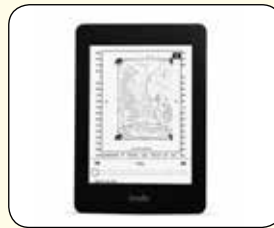
(PRODUCT LAUNCHES)

HP CHROMEBOOK 11



This Chromebook has a 6-hour battery life. The 11.6-inch IPS display has a 176-degree viewing angle with an aspect ratio of 16:9 and a 1366 x 768 resolution. With 16GB SSD and 2GB DDR3 RAM, Google also offers 100GB of free storage on Drive to start with. Pay **\$279** to find out 'who need Windows?'

THE NEW KINDLE PAPERWHITE



Slightly lighter, it has a faster processor making it snappier, and also features a screen that is lit more evenly than its predecessor. The internal memory remains 2GB and it remains the same to look at including its footprint – 6.7 x 4.6 x 0.36 inches. Price: **\$119** (ad supported, Wi-Fi only)

SAMSUNG GALAXY ROUND



Featuring a 5.7-inch curved display as its USP, one should keep an eye on the Galaxy Round. The phone runs on a 2.3 GHz quad-core Qualcomm Snapdragon 800 processor with 3GB of RAM. The phone will have Android 4.3 out of the box and has a 13-megapixel camera. Price: **approx \$1000**.

WORDJUMBLE

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W	J	G	B	Q	I	P	H	V	G	N	I	N	W	O	R	D	E	H	T
X	T	O	T	A	L	W	A	R	N	V	A	H	M	B	L	Q	M	V	Y

ABSOLUTE TIMEPASS

The word grid alongside has names of 17 games we've featured in SKOAR this month. Find them all. Hint: 4 of them are popular short forms of the names.

Top 3 YouTube Picks

Make sure your boss doesn't catch you goofing off with one of these videos playing on your screen



Robot runner
Duration: 2 min 8 sec
The WildCat is a four-legged robot being developed to run fast on all types of terrain at 16mph! <http://dgit.in/botatck>



GTA V car chase
Duration: 5 min 0 sec
The bar has just been raised several notches higher for Hollywood car chases. <http://dgit.in/wwgtavc>



Steam controller
Duration: 4 min 26 sec
Here's a quick look at some games from playing at the helm of the Steam Controller. <http://dgit.in/wwsteamc>

BOOST WINDOWS STARTUP

The launch of Windows 8 has had mixed reactions from the masses. While its snazzy layout and almost instinctive UI gives it a fresh feel, it occasionally handles like a clunky-yet-sleek muscle car in comparison to the light sports model that Windows 7 is. But alas, one must move with the times. Peer pressure, and all that.

One USP of Windows 8 is the faster boot time. However, unlike perfection, this operating system could use a few tweaks to improve the PC's start-up time. To avoid this, the recommended step would be to rely on hibernate; Much like tablets and smartphones (A bar that Win8 seems to be aiming for). However, if you're a user who prefers to shut down your computer for a fresh start every day, here are some steps you can take to improve your start-up time. Most of these techniques can also be used in Windows 7.

Do a clean boot

It would be helpful to note that the Windows startup programs utility in Windows 8 has been shifted to the Task Manager. Open the task manager and move to the Startup tab. Then, just deselect the apps you don't need when Windows starts. For Windows 7 users, access the System Configuration menu [Windows +



Windows' new Startup tab



Boost Windows startup.....	55
Optimise your gaming experience.....	56
Increase your internet potency	58

Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference.

R, type msconfig] to access these options.

Disable animations

If you're not too attached to the smooth transitions and effects in your Windows interface, use the Windows + X shortcut and select the System menu. In the System window, click on Advanced System Settings on the left pane and access the Performance Settings in the Advanced tab. Disable effects that you consider irrelevant. Disabling Aero in Windows 7 by switching to Classic Mode helps. Windows 8 users have the High Contrast option.

Disabling your Start screen and password also helps boost your start-up time. Access the User Accounts Menu [Windows + R, type netplwiz] and uncheck the 'users must enter a username and password' option.

Windows registry tweak

There are certain Windows processes that slow down your start-up. A simple win-

Type this into notepad, and save it as speedystartup.reg; Run the file and restart your system.

The software solution

There are several simple download-and-use software options online. Soluto is a very usable option to do an overall systems check on your laptop to see the errors on your unit. You can use it to find out the applications that hinder your performance. This will help you when you follow-up with Anvi Startup Booster.

Anvi Startup Booster is probably the most convenient, user-friendly one around. Being a 12MB file, it's easy on the download as well as light on the system. On startup, it shows you your current start-up time, and recommends changes



Soluto – A new way to do IT

dows registry tweak takes care of them:

```
[HKEY_CURRENT_USER\ControlPanel\Desktop]
"AutoEndTasks"="1"
"HungAppTimeout"="1000"
"MenuShowDelay"="8"
"WaitToKillAppTime-out"="2000"
"LowLevelHooks-Timeout"="1000"
[HKEY_CURRENT_USER\ControlPanel\Mouse]
"MouseHoverTime"="8"
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control]
"WaitToKillService-Timeout"="2000"
```

that could be made to lower it, a few notches. The plus-point of Anvi is that it has an easy restore option, in case you disable any program you weren't meant to. It's simple, effective and good for people who are uncomfortable with technology.

Manage fonts

Since the dawn of the digital era, Windows has slowed down boot time by loading fonts at startup. This is, admittedly, less of a problem than it used to be, but it can still slow you down. Chances are, you actually use very few of the available fonts. The best way to deal with



this problem is to download a font manager to handle your fonts. While the font manager is running, all listed fonts in it are available on other programs. This way, if you ever want them, you can bring them back, but Windows won't load them at startup. A recommended free font viewer is NexusFont. This freeware app available on www.xiles.net/nexusfont. For designers and other media professionals facing the problem where 30,000 fonts are slowing down their system, Suitcase Fusion 3, a paid software.

- **Hard Drive** – If feasible, a Solid-State Hard Drive is always a good investment. Otherwise a 320 GB 5400rpm hard drive is sufficient.

OPTIMISE YOUR GAMING EXPERIENCE

Gaming has always has its own select cult following. Over the past couple of decades, with the advent of modern console gaming, PC Games have to keep up with an opposing force that grows greater by the year. In

teryear' pile... But pros and cons, right?); And still, without the feel of a keyboard and mouse in FPSes just doesn't feel the same.

So keeping that option aside, and assuming you aren't one of those millionaire geeks, there are some techniques out there to hold your own and suck out the most possible performance from your system, or in the very least, add to your gaming.

Let's start with the obvious stuff, shall we?

Admittedly, the computer is a masterpiece of technology, but not unlike anything else mechanical, it can only do so much with the hardware installed. Games today are already very complicated, so there's no point in overworking your computer. Be a little smarter and use some common sense when setting up your system for gaming.

Update your graphics drivers. I'm sure it's hard to remember. And if that is the case with you, check the settings of your graphic card's driver interface - There's an option that states 'automatically update drivers'. If you have a bad memory, let the computer remember to do it for you. It's not that hard, and it'll give you one less thing to consider when you're wondering why Nomad is taking so long to fire his weapon.

Close unnecessary programs. Shut down your instant messaging clients. Even if you're playing on the best system money can buy, a message notification can randomly your game at critical junctures, causing your game to handle like a sluggish drunk on a Saturday night. That is, presuming your game doesn't just crash.

If your social life can't take a break for a while, check out in-game messaging clients like: XFire (<http://www.xfire.com/>), Raptr (<http://raptr.com/>)

and Steam (<http://store.steampowered.com/>). Lower the load on your RAM and GUI. Unless you're on an incredibly slow system, programs like notepad probably won't make a dent, but the least you can do is shut down your Adobe suite and Microsoft office before cranking up your game. Shut down whatever programs you have running as background tasks. Check your task manager to end the processes you won't use for your game. Sure, they aren't visibly performing any tasks, but they're obviously leeching off your processing power in some small way. Remember to leave your sound and graphics controllers alone, though (yes, as I stated before, this is the obvious stuff).



FRAPS:

FRAPS is a useful tool if you're one of those gamers who likes to review their style to improve their skill - or simply one of those people who like uploading walkthroughs and gameplay videos on YouTube. Be as it may, it's always good to be familiar with FRAPS. This video game capture software is undoubtedly the biggest name in the professional game recording community. We that its mainly because it offers great quality videos, excellent video compression and above all, it's the easiest software available online with respect to controls and usability.

FRAPS, (Frame Rate Per Second) stays true to its name. One of its main features is the yellow numbers that you have the option to disable or show in any corner of your desktop. This is a siample way of measuring the consistency of the frame rate (which is part of the benchmarking process). The game-recording software gives you complete control over audio-visual recording as well as screenshots



The Anvi UI – clean, simple, straightforward.



Upgrade, already!

If your software and setting are up to the mark, move on to examining your hardware. If your PC is configured exactly to Windows 8 minimum system requirements, well, there's your problem. Dig up your tattered wallet and move up the food chain. We recommend:

- **Processor** – Nothing lower than an Intel Core 2 Duo or AMD Athlon X2.
- **Graphics** – Dedicated GPU: AMD Radeon HD 2000 series; NVIDIA GeForce 8 series or higher; Integrated GPU: AMD Radeon HD 3200, NVIDIA GeForce 9400, Intel HD Graphics or higher.
- **RAM** – 2GB (32-bit) or 4GB (64-bit)

turn, gamers today have to keep their systems top-notch and consistently updated to ensure the ever-elusive optimal gaming experience. However, even with the best hardware in the market today, it can be tough (and most of the time, impossible) for a gamer to do an annual overall hardware update or keep his/her pace with the ever-shrinking bytes. Of course, the easier option in this case would be to buy a console. There are always rewards in the puritan approach. There's also the added advantage of not worrying about upgrading your hard disk, RAM and GPU every two years to play the latest instalment of your favourite game series (that is, until the next generation of console comes out and yours joins your laptop in the 'things of yes-

which help set benchmarks for gaming reviewers.

Its simple interface marks it high on the user-friendly scale. The one constant complaint about FRAPS is the monster size of the video files it captures. You can record up to 4GB of footage at a time, and to take full advantage of this software's high quality recording using high frame-rates and still avoiding issues concerning lag, one should be prepared with a good processor. If you intend to go on for a few hours, we would recommend a USB 3.0 hard drive for storage, as a precaution.

Overall, FRAPS does just enough to set itself apart and at the same time, lay the benchmark for other software of the same nature without breaking a sweat.

Raptr and NVIDIA GeForce Experience:

Raptr was started back in 2007 by Dennis Fong (of XFire fame) and played a huge role in pushing online gaming to the level it is in today. It gave gamers worldwide a common hub to come together - gamers' own personal social networking website. Its primary function when it was created was an umbrella like leaderboard for gamers to get a platform where their skills in the field are appreciated and understood. Of late,



Experiencing the NVIDIA GeForce Experience

since Raptr launched its desktop app, it connects members and their gaming effectively, giving people convenient, consistent and mobile connectivity.

Meanwhile, in relatively more recent news, NVIDIA launched its own all-in-one PC Game optimiser. NVIDIA GeForce Experience is, admittedly very useful with the games it supports.

Features: It primarily works as a jack of all trades. When installed, it scans your system for detailed specifications of your computer, correlates that to the recommended system requirements for the games already installed on your PC, and tells you what configuration would be suited best for running the game on your system. Its Shadowplay feature, when enabled, it leverages the NVEnc fixed-function encoder built into Kepler-based GPUs and automatically records the last 20 minutes of gameplay.

players also have the option of manual control. This is a great replacement for software-based solutions like FRAPS, for people who record their gameplay, which reduces the load on your host processor.

Enter the Gaming Mode: Almost all antiviruses today have an option called 'gaming mode' during which they switch to either minimum or zero consumption of your laptop's resources. It's a handy tool to have, and goes a long way to amp up your game performance. Freeing the RAM and the little GPU memory that they consume, it can make the difference between smooth sailing and jerky gameplay with an overheated unit

Virtual Private Networks:

LogMeIn Hamachi is one example of several VPN (Virtual Private Network) creating software available online. Hamachi

specifically is easy-to-use to set up a VPN that's sophisticated enough for a small network of gamers online. Admittedly, Hamachi isn't an enterprise-grade VPN like Juniper and Cisco, but it's reliable enough to ensure that your VPN is secure. It is comparatively much easier to set up, so it's a great option for a small group of users. The free version is a cheap and convenient for people who want to game on a closed LAN-like network. It has string security and does very well emulating a virtual Local Area Network. And if required, Hamachi also has a premium paid version for those who can afford it

Other free options in VPN providers which have comparatively easier interfaces include TunnelBear and VPNBook.

Optimize your in-game graphic settings:

If you're all too familiar with the terms V-Sync, FXAA and Anisotropic Filtering, then you can skip this last segment of the article. For those who don't, here's a short segment explaining what to do with those settings in your Video/Graphic settings in your in-game Options menu.

Vertical Sync: It fixes the tearing (misalignment of pixels) of the screen due to a discrepancy in your refresh rate. Put it on only if you experience this.



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ASUS recommends Windows 8.

ASUS VivoBook

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Screen Resolution: Adjust the resolution of the game within the maximum resolution of your own system. Sometimes this difference in resolutions can cause some major lag issues in your gaming.

Anti-Aliasing and FXAA: AA smoothes out jagged pixels in a game when the game's resolution is on a much lower one than that of the screen. It's effective, but we suggest you only raise the AA of the game after maxing out the appropriate resolution of the game. If the game is having issues with speed, you should just switch this feature off. FXAA stands for Fast Approximate Anti-Aliasing. It does the same thing the AA feature does, but using lesser power from your processor. The downside is, instead of jagged edges in an environment, you end up having blurry edges. So use this feature in accordance to your preferable visual sacrifice.

Anisotropic Filtering: This tweak deals with textures of distant objects in your game's environment. Graphic cards today can handle high levels of this filter, so feel free to keep that at a maximum. However, if you think it is causing a drop in frame rate, keep it on 2x instead of completely off. It shouldn't cause much of a difference in performance, and would enhance your experience considerably.

Shadow Quality, Field of View and Texture Quality: As the names suggest, these features deal with the quality of your environment from the point of making it more realistic. While setting these (usually on high, medium and low), you should do so at your own preference and discretion. Set these on maximum first, then bring each down a notch in descending order of what you'd like to give up. The reverse may also work.

Gaming today has more options. Keeping up with

new features may take time and effort, but it's all worth it. Game On.

INCREASE YOUR INTERNET POTENCY

The internet has become quite an integral part of our lives, social or professional. Staying connected is, beyond doubt, important. Connectivity though depends on several factors. One important thing to keep top-notch is your connectivity to the internet through your computer. Your Internet Service Provider isn't the only one responsible for bad internet connectivity (okay, it's true that most of the time it *is* your ISP, but that isn't completely under your control). It could be a problem at your end.

There are two main kinds of problems you can have with your internet setup. (1) Hardware: Maybe your computer isn't optimized well enough to give you the kind of output you need to get your work done. (2) Software: Maybe it's outdated. Maybe it's insufficient to fulfil your needs. Maybe it's confusing you so much that you've just decided for yourself that a 1gbps connection just isn't fast enough for you.

There are several ways to ensure - assuming that your Internet provider is, indeed, infallible - that you have done all you can do to get the most out of your setup:

Connectify Dispatch:

Connectify is well-known for its Connectify Hotspot - its program for turning your system into your own personal wifi hotspot. Its relatively recent program, Connectify Dispatch also lives up to its hype. However, Dispatch only comes in handy if you have more than one internet connection (not necessarily of the same bandwidth). To put simply, this

software combines the resources of all these available connections and prioritizes your usage to fit the right one. For example, if you're streaming a video on chrome while your iTunes downloaded the new AVB album, this program would prioritize the streaming to the connection with the higher speed while pushing iTunes to the lower speed connection

for the duration of your stream. In this way, it guarantees optimal usage of both bands.

Connectify is available for free download at: <http://www.connectify.me/> the paid premium upgrade is also available.

DNS Servers:

What is a DNS Server? Glad you asked! A DNS Server is akin to a phonebook for the internet. Its main function is to translate the various computer host names into IP Addresses. Example:

Domain name: google.com
IP Address: 74.125.128.113
When the user connects to the internet, the ISP automatically assigns primary and secondary DNS server addresses to your computer. Most of the time the DNS Servers of the service provider aren't optimized. Because



Connectify Dispatch

of this glitch on the ISP's part, these DNS Servers are incapable of handling traffic during peak hours (when everyone on your side of the world is online at the same time), which results in the slow internet speed that annoys you so much. If things get worse, the server goes down. But this problem has a fix. There are several free public DNS Servers which are made to handle heavy traffic. Their servers are distributed worldwide, so if one goes down, the other server closest to you is ready to back it up.

These servers are mostly free, but also have an option to upgrade to premium (at a price, of course) if the difference in your speed isn't satisfactory. The premium servers are less crowded, helping make the connection faster and more reliable.

Here's a list of 10 such free potential servers:

Server Name	Primary DNS	Secondary DNS
Google	8.8.8.8	8.8.4.4
Comodo Secure DNS	8.26.56.26	8.20.247.20
Norton ConnectSafe	198.153.192.40	198.153.194.40
Level3	209.244.0.3	209.244.0.4
Securly	184.169.143.224	184.169.161.155
OpenDNS	208.67.222.222	208.67.220.220
DNS Advantage	156.154.70.1	156.154.71.1
GreenTeamDNS	81.218.119.11	209.88.198.133
SafeDNS	195.46.39.39	195.46.39.40
OpenNIC	74.207.247.4	64.0.55.201
Public-Root	199.5.157.131	208.71.35.137
SmartViper	208.76.50.50	208.76.51.51
Dyn	216.146.35.35	216.146.36.36
censurfridns.dk	89.233.43.71	89.104.194.142



Wi-Fi routers:

Basics: A, B & G routers are old and slow. N-Routers are capable of handling higher speeds. Check on that if you have a speed issue. Also remember: if you want to make use of your N-Router's full potential, your computer should have a wireless N-Card as well. The next thing you need to use a little bit of common sense is with respect to the placement of your router. Try placing it closest to where you use your laptop the most. Once you've done that, please remember, putting behind the fridge or cabinet will, definitely, hinder your performance. Yes, I agree that it seems ridiculously basic a suggestion, but you'd be surprised how many people place their routers out of sight just because it doesn't match their 18th-Century Rajasthani table

Your Wi-Fi Channel: The chances are that the default settings for your router to find a channel are set on auto. If that is the case, the reason your speed's down could be a result of having too many people broadcasting their own Wi-Fi in your vicinity. Fixing this is easy. There's a free program called InSSIDer (<http://www.metageek.net/products/inssider/>) which can be used to determine the ideal channel for your router.

These programs also help improve your router's QoS (Quality of Service). QoS is a broad phrase referring to a collection of networking technologies



inSSIDer

and techniques. The idea behind having QoS is to provide a guarantee that a network will deliver predictable results to the best of their ability. Elements within the framework of QoS usually include throughput (bandwidth), delay (latency), uptime (availability) and error rate.

Electrical Interference: Some devices, like cordless phones and microwave ovens can play havoc with your wifi signal. Keeping these items away from your router would help in the overall performance of your internet connection.

DD-WRT: Disclaimer: This is a specific fix for routers supported by the DD-WRT open-source firmware. So before trying this, find out of your specific router is supported, or you may end up bricking your router.

Most routers don't use their full potential because of the firmware restrictions on them. This tends to affect their overall functionality. To overcome this problem, there exists a Linux-based firmware for wireless

routers and wireless access points called DD-WRT. It is a third-party firmware designed specifically to replace the original on some commercial routers. Alternative firmware like DD-WRT may offer features and functionality sets that differ from the original one it replaces.

Instructions: First thing to do is to go to <http://www.dd-wrt.co.in/site/support/router-database>, (1) Type your router's model number in the search bar and (2) check if your router supports the firmware. If it does, download the corresponding file off the same website.

The installation of DD-WRT depends on your router, but the general instructions are usually the same:

- i) Log into your router's admin page. Consult router's manual for admin address.
- ii) Go to the Admin section and select Firmware Upgrade.
- iii) Select your DD-WRT upgrade file and keep the router plugged in until the upgrade is done.

After DD-WRT installs, reconnect to your network over Ethernet or Wi-Fi (with a new network SSID of dd-wrt) and visit your admin page. In most cases it will still live at the same address of its predecessor. DD-WRT will ask you to choose your own username and password. Older versions may request one, which by default is root/admin (which you should change to your own after this). When you login, you will see the DD-WRT admin page. Welcome to your new router. One thing we haven't mentioned in the segment above is the use of Internet Booster software. Though reputed to do a good job of improving your internet connectivity, most of the effective do so in specific ways; like fixing your connection's latency or bandwidth. But let that not deter you from mailing us your queries at sos@thinkdigit.com.

Before reading any article that tells you how to fix your system, remember, cover whatever bases you can cover on your own before relying on people you assume are more experienced at this than you are..

Coming back to the internet issue, make sure you read up on service providers. What worked for you in Delhi may not necessarily have the same service in Mumbai or Bangalore. ISPs change by the city, and this is with respect to all kinds of connections be it Broadband, USB dongles, 3G data cards or even a 56,000kbps dial-up.



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Tips & Tricks

In this issue, learn how to optimize your gaming experience, internet connection and boost your Windows startup time

57**Workshop**

You thought that pen drive was only for transferring files? Think again. Let us show you its hidden talents.

64

Android tablets going haywire, inaccessible drives, troubling AutoPlay....

System issues or failing gadgets never seem to deter the good folks of team digit and thinkdigit forum and they come to the rescue to troubleshoot the digital lives of our readers.

🔍 AutoPlay not working

I am facing an issue with my PC. The AutoPlay feature for various devices like CD or USB has stopped working. Earlier AutoPlay was working fine, but now whenever I plug in any device into the computer, nothing happens and I don't see the AutoPlay prompt. Please provide a remedy for my problem.

–Chinmoy Das

A To fix this, first head over to the Control Panel and search for AutoPlay. A list will pop up containing several types of media and devices. Tick the checkboxes for all the media or devices for which you want to enable Autoplay. Once you're done, click "Save". AutoPlay should now be enabled for your devices. If this doesn't work, Click the "Start" button. In the search box type "services.msc" and press Enter. In the list of services find "Shell Hardware Detection" and ensure that this service is running. If not, right-click on the service and start it. Right-click on the service again and select "Properties". In the "Startup type" drop down menu, select "Automatic" and click on the "OK" button. You can also search for "Microsoft Fix it 50475" online and download the Microsoft AutoPlay Repair Wizard. Use this tool and try to fix the problem. For more solutions to the issue, head here: dgit.in/HelpAutoPlay

🔍 Tablet trouble

Hi, I have a problem with my Samsung Galaxy Tab 2 - 310.

Its specs are-

- 1Ghz processor. Power VR GPU
- Android 4.0.4

- 7" 1024*600 screen
- 4000mAh battery.

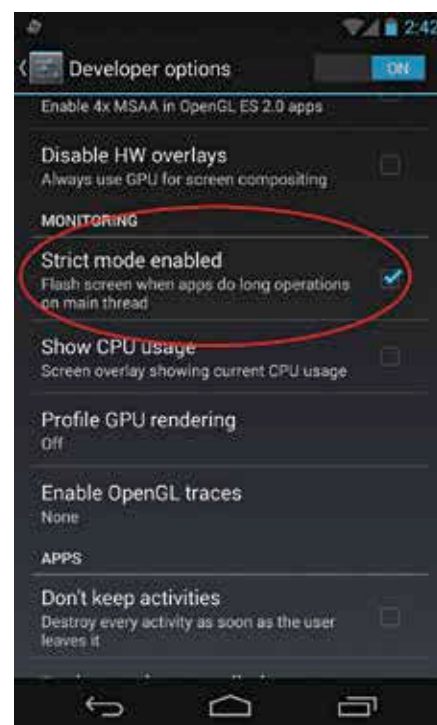
The problem is that it gets very sluggish at times and force reboots at least six times a day. Recently, red thick borders have starting flashing on the screen. So I am forced to reboot and factory reset my tablet a couple of times a day. Please help me fix this. I also wanted to know how can i overclock my tablet, and will it cause any kind of infringement or hiccups with my device?

–Rithvik Reddy Gaddam.

A Since your tablet reboots frequently, there seems to be something very wrong with it. If it's still under warranty, you should take it to your nearest Samsung service center and get it checked. The thick red flashing borders that you see sometimes is an outcome of Strict Mode on Android. Strict Mode is basically a developer tool that detects your device's disk read, write and network processes and tells you when apps do long operations on the main thread. In simpler words, whenever there is too much load on on your device's GPU, it brings them to your attention so that you can fix them. In order to get rid of this, just follow these steps:

- Open Settings > Developer Options;
- Scroll down a little bit and find the Strict Mode option;
- Uncheck or unmark this Strict Mode option;
- Restart your tablet

Overclocking a mobile device is always risky. Overclocking would normally require you to root your Android device which would void its warranty.



Disable Strict Mode from the developer options settings menu

You should only go about it if you know what you're doing as any wrong step may result in your device becoming useless. If you still want to go ahead with it you should check out www.xda-developers.com

🔍 Write protected flash drive

I am having a particular issue with my Transcend 4GB pen drive. Whenever I insert this flash drive in my PC, it shows me that the drive is write protected and bitlocker status is on. What to do? Please help me.

–Guru Prasath



Kaspersky Multi-Device Security

Kaspersky Labs launches its first Multi-Device Internet Security package which can activate Kaspersky Security on upto 5 PCs

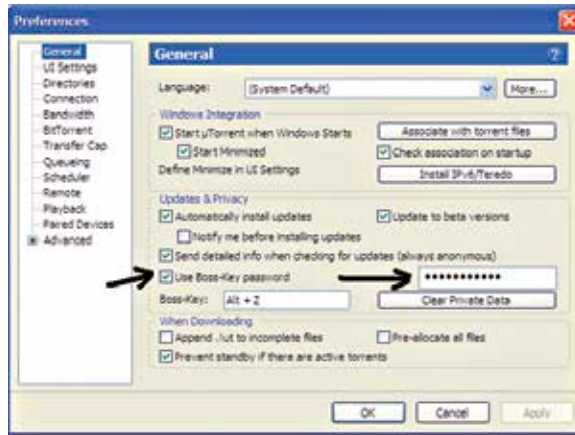


Almost Space

Balloons can take you higher than the eye can see... and to the edge of space! See how: <http://dgit.in/1aFLZtu>

Q&A

A The write protection can be removed with the help of a simple but powerful tool called HP USB Disk formatting tool. This is a compact and free tool with an easy to use interface. Download it from here: dgit.in/DiskFoTo. To use it, install the tool on your PC and connect your pen drive to it. Then launch the tool and select the appropriate option from the menu and your issue will be resolved.



Boss key and password settings in uTorrent

you need to press the boss key and then password to gain access. However, this method has a loophole. Other users can end the task or uTorrent process from task manager and start with its executable.

You can counter this by using uTorrent portable. Now only you will know the location of the executable.

–*gameranand (TDF Member)*

Q Inaccessible system drives

I have two hard disk drives. I've installed Windows 8 on one of them and Windows 7 on the other one. When I boot into Windows 7, I can access content of the other drive but when I boot into Windows 8, I'm not able to access content from the Windows 7 HDD. I am also unable to boot straight into the Windows 8 drive by making it primary using BIOS. When I try to do it, I get a message saying "Bootmgr error". How can I fix this problem and boot into the Windows 8 HDD and access the content from the other drive.

–*stellar (TDF member)*

A Go to Device Manager while you are in Windows 8 and check whether you can see the other HDD. If you can see the hard drive, just head over to Disk Manager and check there if you can see the drive there as well. Now assign a drive letter to the other drive and you should be able to see it. If you are still facing issues, post a screenshot of Disk manager.

–*gameranand (TDF member)*

Q Lock my uTorrent

Hello friends, I came across a weird problem at my college. We use uTorrent to download files but somehow other people come across and delete the downloaded files altogether. Is there a way to hide or lock uTorrent?

–*niraj trehan (TDF Member)*

A You can do this:

- Go to uTorrent Preferences;
- In General, select "Start uTorrent when system starts" and "Start Minimised";
- Make a Boss-key by selecting any key combination;
- Select "Use BossKey Password" and create a password of your choice;
- Open Registry;
- Browse to HKEY_CURRENT_USER>Software>Microsoft>Windows>Current Version>Run
- Right Click uTorrent and select Modify;
- Add "/HIDE" without quotes at the end;
- Restart your PC.

Now uTorrent will run but it won't appear in Taskbar, to open uTorrent

Q dllhost.exe eating memory

I have a strange issue with my PC. I recently re-installed everything on it and saw that a process called dllhost.exe is running in the background and is consuming a lot of memory. The memory consumption keeps on increasing and I get a warning saying "Your computer is running low on memory". It tried searching for the this .exe file and tried deleting it. But It was asking for permissions. Please help me get rid of this issue as I guess this will also affect the performance of my PC while gaming.

–*Shivam Annapure*

A The dllhost.exe process is an important component of Windows. It's responsible for monitoring DLL-based activities in the background. The problem you're facing is very common and you can follow a couple of steps to try and repair it. First perform an SFC scan by opening Run as an administrator and opening the command prompt then typing sfc/scannow in the command prompt. See whether the dllhost com surrogate issue can be resolved. If not, then run a full system virus scan and check if that works. Now do a registry cleanup using CCleaner. Ideally this should fix the issue. **!**

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Triple play

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IPS Display



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Better by 0.1?

Windows 8.1. Should you get it? Or bear with 8.0? Here's something to help you out: <http://dgit.in/1a3d3Em>



Math Shmath

If you were never good at Math, you should have started early. Here's a study showing that Math skills develop at the age of 3 <http://dgit.in/1fSSTTt>

Pocket your utilities

Think your diminutive flash drive got no juice? Wrong! Here's some awesome sauce

Prakrit Dhondiyal

readersletters@thinkdigit.com

The introduction of the thumb-drive by IBM and Trek back in 2000 was revolutionary. It saw the beginning of the first viable replacement of the floppy disks that had been used for conventional data storage since the mid-70s. With the fallout of the floppies between 2002 and 2009, thumb drives (later pen drives, pocket drives, flash drives and USB drives) made their way into being the most convenient method of storing data that can be carried around in your pocket. What started as 8MB storage device now ranges from anything between 1GB to 512GB, depending on the (metaphorical) depth of your pocket. The physical size and capacity of current flash drives in the market open avenues to more creative programming, helping people get more portable. Here are some innovative uses of a pen drive:

Gentlemen, ready your tin-foil hats:

For all those people out there who hate it when anyone else uses their system, there are two simple ways to secure a PC with a USB:

Predator: Everyone likes their privacy, and the people at Predator know it. Predator is a software created to lock your PC using your pen drive as a key. Most people use direct login. Introverts use passwords. Ingenious Paranoia gives rise to Predator. *To Install:* Download the installer from: <http://www.predator-usb.com/predator/en/index.php?n=Main.DownloadFree> The installer program will automatically start Predator. If not, you can launch it manually via the Start Menu>All Programs>Predator item or via the Predator icon on the Desktop. A dialog box will ask you to enter a password and to prepare a USB flash drive. Insert your

USB drive and click OK to continue. Keep in mind that the current contents of your flash drive will be unchanged by this operation. Then you see the Preferences window. Type the password of your choice in the "New Password" field. You will use it to unlock your session if you lose your USB key. You must enter at least six characters, letters, figures or signs. The password is case-sensitive. Also, avoid typing characters that require the AltGr key because this key is disabled in the Password Dialog box later. Check that the drive letter displayed under USB key drive actually matches your flash drive or choose the correct letter from the dropdown list. Click the Create key button and finally, click Ok.

SysKey: Windows also has an inbuilt system utility called SysKey that can help you use a normal pen drive as an access device instead of a regular text based password. To do this the first step is to assign A: as your removable disk drive. This is because the utility was designed to work with floppy drives. To do this hit [Windows] key and type "disk management" and press enter. Right-click the relevant drive name and click rename. Next hit the [Windows] key again and type "SysKey" and press enter. Click on Update Store key on floppy disk. Click ok. After this a file called Startkey.key will be created on your pendrive and your PC won't boot into your desktop unless the pendrive is plugged into your system

Combining these two programs gives anyone with a pen drive a little above-average security on their personal PCs.

Media, media, everywhere:

In a scenario when using a PC where the system is uncared for (other offices, cyber cafes and in college), that a program

as commonly available as VLC hasn't been installed on it. VLC Portable is a program used to fix this inconvenience. It is a mobile version of the VideoLAN Player which can be installed on your pen drive and carried around, complete with codecs and a multilingual language pack.

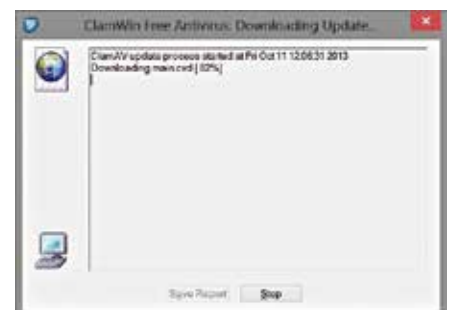
To Install: Download the portable package from the VLC Portable page at http://portableapps.com/apps/music_video/vlc_portable and begin installation. A PortableVLC directory will be created and all the necessary files installed.



Take your VLC with you

The Clam Police:

Eradicating Viruses in any system is usually quite a task. Taking your own data storage devices to alien PCs is always a possible viral hazard. ClamWin reduces chance of your storage devices and hardware contracting viruses from other systems. A free Antivirus for Windows it has a track record for having a high detection rate of viruses and spyware. The Clam Antivirus Team updates its database regularly to include a new virus or variants of old viruses almost regularly. The ClamAV is effective and portable. *To install* the Antivirus on a pen drive, download the setup from: http://portableapps.com/apps/security/clamwin_portable



Clamwin updating...

MacPro Unleashed

After Apple launched its MacPro, it's almost certain you want to know what's inside. Check out this link to watch the stripped down MacPro <http://dgit.in/1h5VKaK>



Rest in Tweets

When you die, kindly remember to include a last post in your Will. Give people closure <http://dgit.in/18HJDwS>

Workshop

Once downloaded, install it in the location of your pendrive. After installation, go to H:/ClamWinPortable/ and run ClamWinPortable.exe (Replace H:/ with the name of the pendrive you've installed CWP on). Clamwin would prompt you to update your databases. Once updated, you're set.

Your mission, if you choose to accept:

In the Mission: Impossible series, it is the secret message that sets the plotline of the story, but you have to admit - it's the self-destruction of the device that fans usually watch those scenes for. Darik's Boot and Nuke is as close to that as you can get, on a data deletion level (short of actually wiring fireworks to your PC).



DBAN Opening Screen

DBAN is a free software for the ultimate data deletion on your computer. It is usually used to erase a hard drive completely to start afresh, new operating system et al, but personally, I would ONLY recommend using it in a situation where you intend to throw out your PC and prevent any chance of people retrieving data off it. Or, if in a hypothetical situation where you want to exact revenge on a techno-geek who really

prizes his hardware (no pun intended).

To Install: First you have to create a bootable pen drive that launches right after the system BIOS. Download and run the Universal USB Installer from: <http://www.pendrivelinux.com/downloads/Universal-USB-Installer/Universal-USB-Installer-1.9.4.3.exe>

Select DBAN from the drop down list and follow the onscreen instructions. Once the installation to USB is complete, restart your PC and set your BIOS or Boot Menu to boot from the USB device, save your changes and reboot. If all has gone well, you should be booting from your DBAN USB. Once DBAN loads, you have two options. The first option being *autonuke* which nukes any and every data module attached to the PC (including the flash drive with DBAN on it). The second is to press Enter and start DBAN in interactive mode, where you can decide which data drives you wish to delete. Once started, the process may take time, depending on the PC's RAM capacity; but when done, there is no chance of recovering any possible data that was on the system.

I bun Ubuntu:

Linux-based Ubuntu is becoming more popular by the year. The OS is well-known for its easy live-boot-and-install feature. But it's also possible to modify the setup to use Ubuntu as an OS-on-USB.

Disclaimer: You *need* a desktop PC at your disposal, and a rudimentary knowledge of taking it apart. You also need two pen drives (at least 4GB and 8GB). The install can be divided into three parts:

Phase one: Live boot

Download Ubuntu 13.04 or 12.04 LTS iso file from: <http://www.ubuntu.com/download/desktop>

Download and run the Universal USB Installer mentioned in the previous section. Create the bootable Ubuntu installation USB drive (the 4GB one). This step can be bypassed by simply creating a boot DVD. That way, you need one less pen drive (just the larger one) and you have a USB port free during installation.

Phase two: Dismantling your PC

Open up your PC and disconnect the hard drive (or hard drives). This part is really important, to avoid GRUB (Linux) bootloader from installing onto the root drive of your existing operating system. If this step is skipped then removing the pen drive (with the new installation) and booting will cause GRUB to load and your original OS will not be available.

Phase three: Installation.

Modify the PC's boot order to boot from your Ubuntu boot USB/DVD. Restart, keeping the pen drive that you want Ubuntu to install on plugged in. When Ubuntu boots, select the pen drive as the install location, and let the OS do its thing.

What you have at the end is a portable Ubuntu OS-on-stick. Oh, and please remember to reassemble the PC exactly how you found it.

Pen drives may *seem* like a dying breed, but as long as they keep adapting to the shrinking byte, people will find newer ways of making use of the portability they bring to the table.



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WHY ANDROID* DEVELOPERS SHOULD USE BEACON MOUNTAIN

Figuring out the shortest route to their neighborhood coffee shop is just one of the many problems Android* developers face on a daily basis. Another persistent problem has been getting all the numerous development tools in one place, keeping them updated, and finally developing for as many platforms as possible in one go. But now these niggles can be a thing of the past.

Beacon Mountain provides a revolutionary new development environment for Android apps targeting ARM* and x86-based devices, and it provides all the Android-related development tools under a single umbrella. It is available for Windows* and OS X*. Beacon Mountain provides a one-stop shop to automatically retrieve all the necessary tools related to Android development for Intel© processor-based as well as ARM-based devices. As opposed to other environments, Beacon Moun-

INTEL BEACON MOUNTAIN, THE CODE NAME FOR INTEL'S ANDROID DEVELOPMENT ENVIRONMENT, PROVIDES A FULL INTEL AND THIRD-PARTY TOOLSET WITH IDE INTEGRATION FOR ALL THE STAGES OF ANDROID APP DEVELOPMENT.

tain helps keep all your tools updated to the latest version without any manual effort as it automatically checks for updates and prompts you to install the latest software. Apps created using the third party tools can run on devices beginning with Gingerbread 2.3, while apps developed using Intel tools support Jelly bean 4.1 and up.

For any software brand or company operating today, it is critical to have a strong mobile presence. One of the best ways to connect with a wider audience is through mobile apps. Developers are looking for easy portability (build once and publish for multiple platforms). Android is the market leader in terms of the number of devices that use it. While the majority of mobile phones and tablets run on some form of an ARM* chipset, Intel® Atom™ processor-based mobile phones and tablets are gaining popularity in the market. The

Beacon Mountain development environment allows developers to write apps for both Intel processor- and ARM-based platforms within the same development environment.

Android's flexible architecture allows most apps to run without any issues on top of a Dalvik Virtual Machine, which abstracts most of the code from the underlying hardware. This allows developers to program apps in Java* without worrying about the differences in functionality on varying hardware architectures.

Many of these Dalvik-based apps that are developed in Java can easily run on Intel devices just like they do on ARM. Moreover, the binary translation functionality makes it easy even for some of the native ARM apps that are dependent on the Android NDK to run on Intel devices without any effort on the part of the developer. The Intel Atom chipsets have innovative features that make them suitable for tablets and mobile phones. Codenamed Silvermont and Haswell, these chipsets are already showing Intel's increasing presence in the new wave of portable devices. While it is impossible to predict the future of the computing industry, trends indicate an impending unification of processor architecture for all devices, regardless of form factor. Intel x86 architecture, both Intel Atom and Intel® Core™ processors, will play a very important in this process.

OVERVIEW

Intel Beacon Mountain, the code name for Intel's Android development environment, provides a full Intel and third-party toolset with IDE integration for all the stages of Android app development. The product not only aims to lower the entry barrier for developing apps for the Android platform on Intel-based devices, it also demonstrates Intel's commitment to Android. The best part about Beacon Mountain is that the tools it installs not only support apps for Intel processor-based devices, but also facilitates development of apps for ARM-based devices, so that developers do not need to jump between development environments to target multiple architectures. Beacon Mountain currently supports Android Jelly Bean 4.1 and later for the Intel-based tools and Android Gingerbread 2.3 and later for third-party tools. The development environment currently supports Intel Core processor-based host systems running Microsoft Windows* 7-, Windows* 8 64-bit-, and Apple OS X*-based machines. Intel plans to support additional platforms in future releases.

The following Intel tools are installed and auto-updated by Beacon Mountain:

- Intel® Hardware Accelerated Execution Manager
- Intel® Graphics Performance Analyzers System Analyzer
- Intel® Integrated Performance Primitives Preview for Android*
- Intel® Threading Building Blocks
- Intel® Software Manager

Standard third-party tools include the Google Android SDK and NDK and the Eclipse* IDE. Intel also provides the Android Design bundles.

You will notice that the Oracle JDK is not included in the bundle; however, Beacon Mountain checks to make sure you have it installed. If you don't, Beacon Mountain points you to the Oracle site to install a copy.

INSTALLATION OF BEACON MOUNTAIN TOOLS

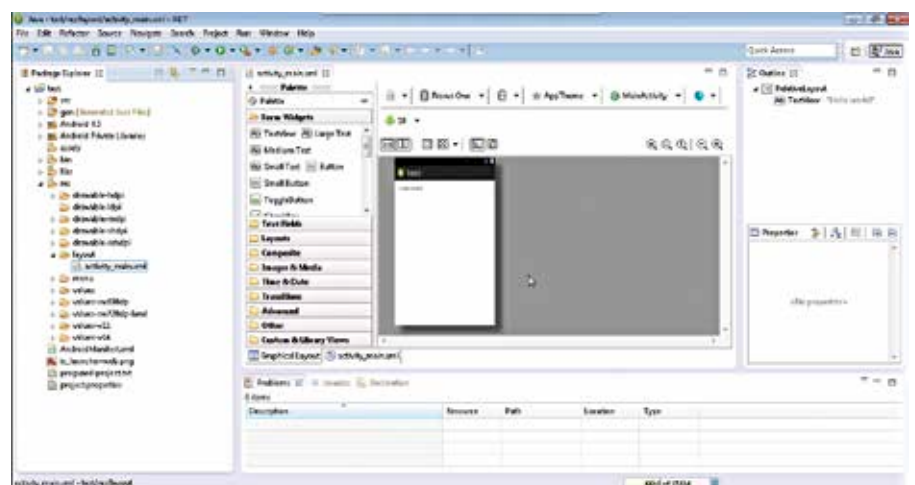
The Beacon Mountain installation binary is available at the Intel web site <http://dgit.in/intelbm>. The binary is basically a web-based installation wizard that downloads all the tools. The installation is as easy as any other one-click installation on a Windows system. The installer shows you the software it will install and asks you to accept licenses in a single view, making the overall installation process very easy. Once the licenses are accepted, the tools are automatically downloaded in under 45 minutes in most cases. The installer automatically detects if the third-party tools are on your system and installs the ones that aren't, so that you can avoid any conflicts. Once installed, the Eclipse IDE shortcut is placed on your desktop.

Alternatively, you can launch Eclipse by going to the Beacon Mountain installation folder. If you are on a Microsoft Windows 7 or Windows 8 system, you can find the 'Beacon Mountain' submenu on the Start menu. Similarly, on a Mac, it may be possible to open the Beacon Mountain folder easily from spotlight. If you want to use the NDK, you can then set its location from the Window > Preferences > NDK submenu. The SDK's locations and all the required components from the Android SDK Manager are already installed by default. Now all you need to do is create an Android Virtual Device.

Uninstallation is equally as easy. In Windows, you can remove any unwanted software elements by going to the Control Panel's Uninstall menu or by running the installation binary and then choosing the 'Remove' option in the wizard.

THIRD-PARTY TOOLS OVERVIEW

The Android Developer Tools (ADT) bundle provides a comprehensive Android development toolkit provided by Google. There are many bundled tools included that supplement the functionality such as the DDMS, Pixel Perfect, Hierarchy Viewer, MonkeyRunner, Traceview, etc. For a more detailed overview of each of these tools, you can take a look at the "Android for Intel Architecture" devworx booklet published in the March 2013 edition of Digit Magazine. It provides an in-depth overview of how to develop Android apps, specifically using third-party and Intel tools. Beacon Mountain officially supports and bundles the Eclipse integrated development environment. Eclipse is one of the most used IDEs with support for the largest number of plug-ins. If you prefer



The Eclipse ADT environment

to use another IDE, you can definitely do so. However, you will need to manually handle the configuration, integration, and updates yourself, instead of letting Beacon Mountain do it automatically. Android NDK is the Native Development Kit that supports implementation of Native C/C++ code in your Android applications. Cygwin is another important utility that provides a Unix*/Linux*-like environment to interface with tools such as vi, make, gcc, etc. This becomes important when trying to implement code that uses both Java and C++ in the underlying source code. Since it is listed as a requirement for the Android NDK, Beacon Mountain tools bundle Cygwin as well.

Beacon Mountain also includes all the Android Design elements that are important for designing the UI of most Android applications. This includes icon packs, stencils, Robotofont, etc. Google also provides these elements in the Adobe Photoshop* and Illustrator formats, so that they are easy to integrate with the rest of the applications and can be modified accordingly. Google recommends that you design your application according to the Holo Design Guidelines. The Holo interface is the theme generally adhered to while designing most Android apps since Android Honeycomb 3.0. The three available Holo themes are Holo Dark, Holo Light, and Holo Light with dark action bars. You may refer to the online design guide for more details here: <http://dgit.in/holodesign>.

INTEL SOFTWARE MANAGER

The Intel Software Manager is a utility installed by Beacon Mountain. It is available for all three operating system environments (including Linux), although it is only distributed for Windows and OS X in combination with Beacon

Mountain. Intel Software Manager downloads and installs updates for all software. Intel Software Manager allows you to update subscriptions and serial numbers as well as retrieve the latest news related to Intel software development products. You can configure various parameters related to software updates using its interface. This includes the frequency at which updates are checked, download location, notification method, and other privacy settings. The update frequency can be set at manual, when an Intel tool is launched, at system start-up, or on a periodic time-based frequency. The default download location of updates for Intel Software Manager is as follows:

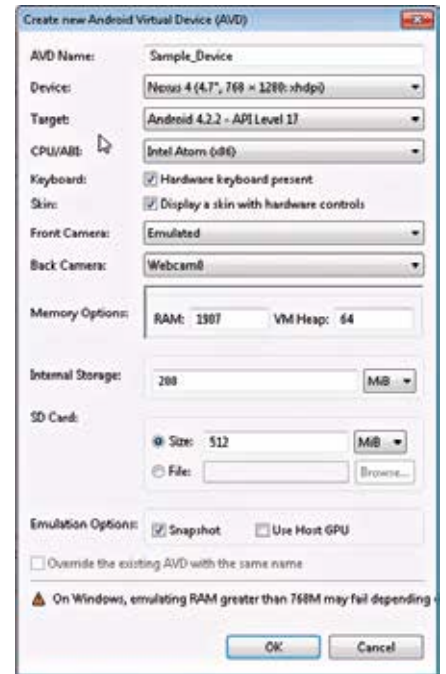
- Windows OS: [MYDOCUMENTS]\Intel\Download
- Linux OS:
Root (sudo) users: /root/intel/download
Non-root users: \${HOME}/intel/download
- OS X:
Root (sudo) users: /root/intel/download
Non-root users: /Users/[user]/intel/download

INTEL® HARDWARE ACCELERATED EXECUTION MANAGER (INTEL® HAXM)

The Intel HAXM is a virtualization engine or hypervisor that utilizes the Intel hardware-assisted virtualization technology to greatly speed up the execution of the Android App emulator. Intel HAXM supports Microsoft Windows, Apple OS X, and Linux (Ubuntu*). However, it is distributed as part of the Beacon Mountain bundle for Microsoft Windows and Apple OS X only. Linux users can set it up manually using KVM virtualization with the help of the installation tutorial available online here: <http://dgit.in/inteltuto>.

The minimum requirement for Intel HAXM is an Intel processor that supports Intel® Virtualization Technology (Intel® VT) or hardware-assisted virtualization, EM64T and Execute Disable (XD) Bit functionality along with at least 1 GB of RAM. Beacon Mountain checks for all these requirements during installation and will notify you accordingly if they are not met. If you are sure that your processor supports this functionality and you still get this error, then you should check your BIOS to see if the Hardware Virtualization

feature has been turned off. Once the installation is complete, you can check if Intel HAXM is running or not by executing the "sc query intelhaxm" command on Microsoft Windows or the "kextstat | grep intel" command on Apple OS X. One important thing to understand is that Intel HAXM only supports Intel Atom processor-based x86 images for the emulator.



Creating an Android x86 virtual device

To create this image, you can choose the CPU/ABI as "Intel Atom (x86)" and a RAM memory of not more than 1024 MB. Once you create the image and launch it with any of the sample programs, you'll notice a significant increase in the execution of the program. If you want, you may also choose to use GPU acceleration, which will improve the graphics performance by offloading any OpenGL* calls to the host GPU.

INTEL® GRAPHICS PERFORMANCE ANALYZERS (INTEL® GPA)

The Intel GPA Graphics Performance Analyzers are a set of profiling tools that provides metrics and optimization features for graphics intensive applications such as games. One of these tools including the GPA System Analyzer is available for targeting Intel Atom processor-based phones for free and provides a complimentary alternative to the Intel® Vtune™ Amplifier XE so that developers can perform



The Intel Software Manager settings screen

basic optimizations and identify bottlenecks easily. Recent Intel GPA releases now also support Intel Core processors running on Microsoft Windows 7 or 8 target platforms. The Intel GPA System Analyzer now also allows you to target both Android apps and Microsoft Windows applications in the recent releases.

The Intel GPA Monitor launches the application for analysis and other dependent components that are required to run the application, detects the launched application, configures the HUD (Heads Up Display), sets up triggers and application profiles, etc. The Intel GPA System Analyzer GUD allows you to analyze metrics like memory, power, and OpenGL-related metrics, for example, App Resident memory, current charging, Frame Time, etc. It captures frames for further analysis and finds performance bottlenecks. The Intel GPA System Analyzer helps analyze OpenGL ES* applications running on an Intel processor-based Android device that is connected to the host system. The best part about this tool is that it does not require the developer to make any changes to the application code. The wide range of metrics and intuitive user interface allows you to explore and easily determine available functionality. This tool is also well suited for performing experimentation during the development process of the application to identify various approaches for adding and removing visual effects to gauge their performance impact.

SETTING UP THE ADB CONNECTION

Before setting up the Android Debug Bridge, or ADB, first be sure that the USB Debugging option is enabled in the Settings menu on the Android device. If not done, it can be enabled from the developer options menu in the settings menu of the Android device. Since Beacon Mountain already installs all the required dependencies



The device connection screen when GPA starts

for you, not much else is required in terms of installing extra software. If the Google Android SDK and the Android USB Driver are not installed, Beacon Mountain will display a message asking you to ensure that these requirements are met before it lets you proceed. To start the connection, plug your device into the host computer with the USB cable and then open the Intel GPA tool's settings dialog by pressing [Ctrl]+[F1] from the Connection window. Here, make sure that you provide the correct path for the ADB tool installed on your system from under the platform tools directory of the Google Android SDK. This is all that Intel GPA requires in order for your device to connect to your Intel processor-based Android device. If you have any problems, you can disconnect the device, run the "adb kill-server" command, and then see the output of ADB devices after re-connecting again. You can also establish a connection over Wi-Fi* to perform analysis wirelessly for Android 4.0 or newer devices.

PERFORMING THE ANALYSIS

Once connected, the application being analyzed is shown in the list of analyzable applications. The application can be made analyzable by enabling the debugging and Internet connection permission in the Android Manifest.

The main Intel GPA screen is divided into various panels for viewing and controlling parts of the application. The Metrics panel shows you the list of metrics supported by the connected device. This varies depending on the underlying chipset of various devices. When Intel GPA starts, the device connection screen generates the content to add support for JNI functions in the Android application. To run the application that you are developing, you will need to copy the files from the Beacon Mountain installation directory and enter the source where it is relevant. In our example, the native function retrieves the version of the Intel® Integrated Performance Primitives (Intel® IPP) and returns the value to the calling Java function. This is shown in the HelloIPP.c example that follows:

```
#include <jni.h>
#include "ipp_preview.h"
JNIEXPORT void JNICALL
Java_intel_exampl_Hel-
```



The Android Application chooser in the GPA tool

```
loIPP_Hel- loIPP_IPPVersion(
JNIEnv* env, job- ject this,
jin- tArray *vinfo) {
// get a pointer to the Java
array jint *tmp = (*env)-
>GetIntArrayElements(env, vinfo, 0);
// call IPP's utility function
to get library version info
const IppLibraryVersion
*lib=ippGetLibVersion(); // copy
this info into the array (visible
from Java caller)
tmp[0]=lib->major;
tmp[1]=lib->minor;
// release the pointer (*env)-
>ReleaseIntArrayElements(env, vinfo,
tmp, 0);
}
```

The calling function can be called in Java as follows:

```
package intel.example.HelloIPP;
import android.app.Activity;
import android.widget.TextView;
import android.os.Bundle; public
class HelloIPP extends Activity
public class HelloIPP extends
Activity
{
public native void
IPPVersion(int[] vinfo);
@Override
public void onCreate(Bundle save-
dInstanceState)
{
super.
onCreate(savedInstanceState);
// Call the native function which
queries the IPP version info
int[] ippversion=new int[2];
IPPVersion(ippversion);
```




The Intel GPA main screen

```
// Display version info in a
TextView
TextView tv = new TextView(this);
tv.append("    test
major="+ippversion[0]+"
minor="+ippversion[1]);
setContentView(tv);
}
// Load the native library
static {
System.loadLibrary("HelloIPP");
}
}
```

The Metric Chart Area at the center can show up to 16 charts for each of the available metrics. You can select and drop the relevant metrics in the chart area to show the related chart for that particular metric. These metrics are grouped into CPU, GPU, OpenGL API, Power, Memory, and Device I/O categories. You can also create custom metrics by inserting the relevant functions in your application code. These custom metrics will eventually appear under the User group of the Metrics Control Panel. The State Overrides Control Panel lets you set the various override modes for performing short experiments on the application. For more details on the override modes, you can refer to the online or bundled documentation. The Control Panel provides buttons for some of the most basic functions such as CSV export, starting/pausing the metric data collection, etc. The FPS Area and Notification Area at the top perform similar functions of displaying relevant information such as FPS values, name of the application, OpenGL ES

version, status of Vsync, size of the application window, etc. An example of retrieving the extension functions and utilizing custom metrics in your application code is as follows:

```
CreateMetricGPA_t pfn-
CreateMe-   tricGPA =
(eglCreateMetricGPA_t)eglG
etProcAddress("eglCreateMe
tricGPA");
    eglSetMetricValueGPA_t
pfnSetMetricValueGPA =
(eglSetMetricValueGPA_t)
eglGetProcAddress("eglSet
MetricValueGPA");
    eglRemoveMetricGPA_t pfn
RemoveMe-   tricGPA =
(eglRemoveMetricGPA_t)eglG
etProcAddress("eglRemoveMe
tricGPA");
```

```
// Creating a new metric
EGLint hMetric = -1;
if (pfnCreateMetricGPA) {
hMetric = pfnCreateMetricGPA("Ref
value(42.0)", "unit", "Synthetic");
}
// Setting a value for the metric
if (pfnSetMetricValueGPA) {
pfnSetMetricValueGPA(hMetric,
42.0);
}
// Removing the Metric
if (pfnRemoveMetricGPA) {
pfnRemoveMetricGPA(hMetric);
}
```

The Intel GPA Console Client tool enables automatic collection of metric data from the command line. It lets you specify the device and application name as one of its arguments and accepts the list of metrics to collect in a configuration file. You can similarly export these metrics into a CSV file. You can type in the "gpa_console_client -h" command from the command line to find more details about the syntax.

INTEL® THREADED BUILDING BLOCKS (INTEL® TBB)

The Intel TBB is a library for developing parallel functions within your application and in your C++ code. This is relevant for Android phones and tablets as multi-core mobile processors are now the norm and ubiquitous. Using Intel TBB gives you a significant performance advantage without major effort and with typically less code. There are various forms of licenses

available—the commercial binary distribution license, an open source distribution license, and a custom license—that allow you to modify or distribute the source code of Intel TBB. The latest version can be downloaded from <http://threadingbuildingblocks.org/download>. For Android, just download the Linux version. You can then use the libtbb.so and libtbbmalloc.so libraries in the lib/android folder.

Some of the basic algorithms are parallel_for, parallel_reduce, and parallel_scan, and advanced ones include parallel_while, parallel_do, parallel_pipeline and parallel_sort. Some of the advantages of using Intel TBB for parallel programming include specification of logical parallelism instead of thread-based programming, focus on performance-based threading, easier compatibility with other packages and approaches, data parallel programming, and a focus on the generic programming approach. The parallel_for function provides one of the simplest use cases for demonstrating the parallelization in Intel TBB, which makes tasks in a loop parallel.

All you need to create a class is a function called "operator," and pass the name of this class to the parallel_for function. Blocked Ranges become important here as they represent one-directional iteration spaces that are to be split into several task ranges that may or may not be parallel. A sample of one of the examples can be seen as follows, where we first define the body object, which is an STL-style function object, and then call the parallel_for function. In this example, we are going to take the Foo function that runs on each element of an array and make it parallel.

The code to do this sequentially is as follows:

```
void SerialApplyFoo( float a[],
size_t n ) {
for( size_t i=0; i!=n; ++i )
Foo(a[i]);
} However, in order to parallelize
this loop, we define this inside a
body object as follows:
#include "tbb/tbb.h"
using namespace tbb;
class ApplyFoo {
float *const my_a;
public:
void operator()( const blocked_
range<size_t>& r ) const {
float *a = my_a;
for( size_t i=r.begin(); i!=r.
end(); ++i )
Foo(a[i]);
}
```

```

ApplyFoo( float a[] ) :
my_a(a)
{}
};
Once we have the body object ready, we can
call the parallel_for function as follows:
#include "tbb/tbb.h"
void ParallelApplyFoo( float a[],
size_t n ) {
parallel_for(blocked_range<size_
t>(0,n), ApplyFoo(a));
}

```

INTEL® INTEGRATED PERFORMANCE PRIMITIVES PREVIEW FOR ANDROID*

The Intel IPP preview for Android is a rich library of data and multimedia processing functions for various environments that include not only Android, but also Windows, Linux, and OS X. These functions are highly optimized and use the Intel® Streaming SIMD extensions and Intel® Advanced Vector Extensions (Intel® AVX). Intel IPP caters mainly to Signal processing, Image processing, Matrices, and Cryptography and can be used on any processor that supports SSE2 or newer instruction set. Beacon Mountain bundles a preview of Intel IPP functionality available as a free download. If developers choose to use this library, they can buy an extended version from the Intel web site. The Google Android NDK is a prerequisite before you can use or run a sample program for Intel IPP, because it is called using native code from the C/C++ part of your application. To prepare to run the sample HelloIPP app, we need to create a HelloIPP Android project in the Eclipse IDE, with an activity of the same name. Once this is done, native support can be added to the project by right-clicking on the project name and choosing Android Tools > Add Native Support. This will autogenerate the contents to add support for JNI functions in the application.

To run the application, copy the files from the Beacon Mountain installation directory and enter the source where it is relevant. In our example, the native function retrieves the version of the Intel IPP library and returns the value to the calling Java function. This can be written in HelloIPP.c as follows:

```

#include <jni.h>
#include "ipp_preview.h"
JNIEXPORT void JNICALL
Java_intel_example>HelloIPP_HelloIPP_IPPVersion( JNIEnv* env,

```

```

    jobject this,
    jintArray *vinfo)
{
    // get a pointer to the Java
    array
    jint *tmp = (*env)-
>GetIntArrayElements(env, vinfo, 0);
    // call IPP's utility function
    to get library version info
    const IppLibraryVersion
    *lib=ippGetLibVersion();
    // copy this info into the
    array (visible from Java caller)
    tmp[0]=lib->major;
    tmp[1]=lib->minor;
    // release the pointer
    (*env)-
>ReleaseIntArrayElements(env, vinfo,
    tmp, 0);
}

```

The calling function can be called in Java as follows:

```

package intel.example>HelloIPP;
import android.app.Activity;
import android.widget.TextView;
import android.os.Bundle;
public class HelloIPP extends
Activity
{
    public native void
    IPPVersion(int[] vinfo);
    @Override
    public void onCreate(Bundle
    savedInstanceState)
    {
        super.
onCreate(savedInstanceState);
        // Call the native function
        which queries the IPP version info
        int[] ippversion=new
        int[2];
        IPPVersion(ippversion);
        // Display version info in
        a TextView
        TextView tv = new
        TextView(this);
        tv.append(" test
        major="+ippversion[0]+"
        minor="+ippversion[1]);
        setContentView(tv);
    }
    // Load the native library
    static {

```

```

        System.loadLibrary("HelloIPP");
    }
}

```

When you run this application, you should be able to see the Major and Minor version numbers of the Intel IPP library. When you are confident you understand the sample app, you can decide if you want to buy the complete library. Once done, all you need to do is replace the static library and include files in the JNI folder of the application. The bundled sample programs provide advanced examples of how to use the functions for audio-video codecs, computer vision, image processing, speech codes, data compression, etc. There is also a reference guide available that provides a comprehensive list explaining each type of utility function available in the library.

CONCLUSION

Beacon Mountain provides you with all the tools you need to get a jumpstart with Android app development on Intel processor-based mobile phones and tablets. With the help of Beacon Mountain, you no longer need to worry about setting up and configuring the IDE and retrieving everything from multiple sources. Moreover, it provides a rich set of examples to give a taste of how to use high performance libraries like Intel IPP and Intel TBB. ■

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86

Point and shoot!

Cellphone cameras have improved a lot over the years and so we pit eight smartphone cameras in this shoot-out and let you know which snapper is the absolute best of the lot for your needs

Swapnil Mathur

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Saying that cellphones have come a long way would be one of the biggest understatements of the year. They've gone from large, clunky monochromed bricks to devices that are designed with elegance and have rendered the notebook, the mp3 player, and even wallets (in some cases) obsolete! The cellphone advancement is heading in the

direction of being the "one-device-to-rule-them-all". It has its eyes set on replacing your point and shoot camera.

With society becoming increasingly connected, thanks to social media and its increasing need to share information in a world where individual citizens try to grasp on to the fading idea of privacy, the camera has become extremely essential for the proper functioning of this social machine. Earlier, it was "take your camera, shoot the

party, go home, transfer photos to your PC and THEN post them online." The process was long and tedious and someone had the genius idea of "what if you could just take the photos on your phone?" While it was a solid notion, the problem was that cellphone cameras with their miniature sensors just couldn't match up to the quality of even the basic point and shoot.

Today, all that changes. We have with us eight cellphones

with industry-leading camera modules. Nokia revolutionized the game with the PureView 808 and its 41 megapixel sensor and then again with the Lumia 920, the first cellphone to have optical image stabilization built in. Sony brought another game changer, by putting a point and shoot camera sensor and optics into a phone. Then there is the iPhone, which changed how much we all shared online. The LG G2 brings a totally novel shooting ergonomic into an



industry that's got its design language pretty set. Samsung's contender in this battle is a phone bolted to a camera – the Galaxy Zoom and the only cellphone camera that gives us proper optical zoom. So which of these is actually a good enough phone to replace that bulky point and shoot? Read on to find out.

The feature packer

All of the camera phones in this shootout are pricey, so it is imperative that you get the most photography related features you can. In our testing, we found that the Lumia 1020 packs the most features for a cellphone. This ranges from megapixel count, to sensor size, to optics, and even the battery life (if you're going to be shooting for long, you need a good battery!) The Lumia 1020 does pack the mother of all sensors, with 41 million pixels spread across a 1/1.15 inch sensor, the biggest in a modern day smartphone. It's also packing the optical image stabilization that we first saw in the Lumia 920, but switches out the spring based mechanism from the 920 (and 925) for a ball bearing based system.

Surprisingly, the Samsung Galaxy Zoom comes in at a close second, with an optical zoom capable lens (which is some-



Nokia Lumia 1020

what slow though) and shipping with multiple shooting modes, including P/S/M modes built into the default camera app. Other than that, it has some features very standard to the category it belongs, with other phones coming with a lot more. For example, we felt that the Sony Xperia Z1 had a pretty decent set of features, including a manual mode. The 1/2.3 inch sensor and the Sony G lens is something that we usually find in the company's point and shoot cameras such as the WX300 (which we liked quite a lot). It's got a mammoth 3000mAh battery too, to make

sure that you don't run out of juice on your shooting frenzy. The display on the Z1 is, if put bluntly, simply fantastic, rendering images in all their colourful glory. It is, however, not 100% accurate, being a TFT LCD type and not an IPS panel like in the Lumia 920.

Speaking of the Lumia 920, this is the phone that began



Nokia Lumia 920

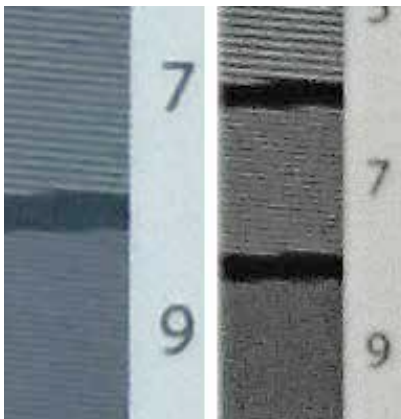
a new trend in mobile imaging by building an optical stabilization assembly right into the lens elements. The 920 packs a very gorgeous IPS display, which might not be incredibly saturated, but the colour and contrast rendition on it is absolutely accurate. The f/2.0 aperture on this is the brightest in the lot, meaning that the Lumia 920 lets in the most light of all the cameras in this shootout. However, the phone loses out to the fact that the 2000mAh battery built into it is somewhat underwhelming.

When considering features revolving around photography, it is impossible to ignore the LG G2, which also comes with



Nokia Lumia 925

optical image stabilization built into the lens. However, what really stands out is the power/shutter button that LG has removed from the usual side you'd find it on, and put it on the back. As unconventional as it may seem, the button is actually really well designed. Whether you're shooting "Selfies" or just taking shots using the rear camera, the button is incredibly easy to press and doesn't actually induce any shake, unlike other phones that have their shutter button on one extreme of the camera body. The HD+IPS panel is also beautiful and the camera itself has a pretty decent aperture of f/2.4



Lumia 1020s 41MP sensor on the left far outresolves the one on the Xperia Z1 right



Lumia 1020 resolves more lines per inch on the left than the iPhone 5's 8MP sensor right

The studio performer

Now going into this test, we had a pretty fair idea of which camera was going to come out on top, but what we did not know, was the rest of the order. The Lumia 1020 has a gigantic sensor (relatively, but still), not just in physical size, but also in the megapixel count. Factoring the size and the megapixel count, the effective pixel pitch on the camera drops to 1.12 μm ,



Oculus primed

The Oculus Rift, hugely criticized for its less-than-perfect resolution takes another step for the consumers

Some chroming required

Google Chrome may be raising efficiency... But at what cost? Find out here: <http://dgit.in/180UjST>

which is actually smaller than the pixel pitch on most other camera phones. However, Nokia offsets this by a very intelligent algorithm that combines the data from four adjacent pixels into one. This allows the Lumia 1020 to pretty much nail everything on our resolution chart. The horizontal and vertical lines on our chart rendered beautifully on both the 38 megapixel and even the 5 megapixel files. The edge sharpness was pretty good, too as the text we placed in the corners was clearly readable. Frankly put, performance like this coming from a cellphone camera, one that we normally only see in a point and shoot camera, is impressive.

Speaking of point and shoot cameras, the Xperia Z1 was

not to be left behind. With the very impressive 16 megapixel 1/2.3-inch sensor paired with a Sony G lens, the Xperia Z1 managed to dish out some very impressive performance as well. Edge sharpness was surprisingly good, but what we liked the most was that it was able to do justice to the colours on our test. The Lumia 920 and the 925 did equally well, which was a little surprising seeing how the Lumia 925 has a sixth lens element that is supposed to improve the image quality on the camera. The iPhone 5 did quite well as far as the resolution goes, but had a little problem keeping the distortion low.

The LG G2, despite having the relatively smaller sensor when compared to the Lumia

1020 and the Sony Xperia Z1, did exceptionally well. Even though it had slightly lower



Sony Xperia Z1

resolving power than the other two, it still was on the higher side. If you chose the G2 over all others in this shootout, you'd still be getting great images. The Samsung Galaxy Zoom, is the most novel of the lot, and lends the feeling of shooting with an actual point and shoot, but doesn't do as well as a point and shoot would. The images out of the Galaxy Zoom visibly lacked edge sharpness, which is a little surprising seeing how the optical assembly on this big guy is the same one would find on a point and shoot.

The HTC One dual SIM comes with the "Ultrapixel" sensor, which is the same size as a regular camera sensor (1/3 inch) but with only 4 megapixels of resolution. HTC says what they don't deliver in megapixels, they claim to deliver in image quality, but unfortunately, our resolution chart begs to differ. The edge sharpness on the HTC One was disappointing, as was the colour reproduction. It did, however, manage to make the most out of the 4 megapixel sensor in terms of resolution reproduction though.

If a winner was to be picked, it would be the Lumia 1020 for sure, but the Xperia Z1 isn't too far behind. The Lumia 920 and 925 can hold their own with their 8 megapixel sensors, as can the LG G2 and the Samsung Galaxy Zoom with their 13 and 16 megapixel slabs of silicon respectively. The iPhone 5 is good too, but it showed some distortion while the HTC had trouble with the colours.

HOW WE TESTED

The goal of our test this time was to determine which phone camera would give the best image quality regardless of the shooting conditions. As a camera that's going to go everywhere with you, we also wanted to make sure the video features on these shooters was up to the task of documenting our all your precious moments.

We divided our tests into three parts, two for stills and one for video. One set of tests involved shooting a simulated test target in controlled light to measure color depth/accuracy, white balance accuracy and lens sharpness in the corners and center. A controlled test target also helps determine the ISO performance of a camera. We also devised our test target to measure dynamic range by including pure black, pure white and neutral grey areas which would effectively measure the sensor's ability to capture various levels of illumination. All test target shots were taken in Program mode as most of these cameras do not have an Aperture Priority mode. At the center of the test target is a resolution chart that helps us measure horizontal and vertical resolution.



This fine spreadout was our palette for the test.

The second phase of testing involved getting outside the studio and shooting with each of the cameras a "real world" scenario. We included several kinds of still life, lots of landscape, some macro along with the usual people shots. For our low light testing, we just walked around with all the phones late at night shooting the cityscape. We also shot coloured targets in a dimly lit room to see how good the colour accuracy would be in low light/high ISO conditions, along

with checking for sharpness across the board.

Video performance was tested outdoors during daytime and night. While the outdoor filming allowed us to gauge the dynamic range and audio prowess of each of the cameras, the night time test allowed us to have a true measure of how well the sensor can curtail and snub noise along with how much detail it could retain in highlight and shadow areas. All shooting was done using the default camera app.

The real world dominator

Now this is where things got really interesting. While the image quality of the Nokia Lumia 1020 was top-notch, it seriously faltered in some

Android Expansion

Android gadgets of the future may be getting a LITTLE out of hand
<http://dgit.in/19WHPwr>



Saving the Smartwatch

An article emphasizing ways to can get the best out of the next generation of Smartwatches
<http://dgit.in/H6qYRI>

Camera Phones

other key areas. For starters, the camera app. Nokia Pro Cam, which is default on the 1020, takes almost a second and a half to ready itself for the first shot. We pressed the physical shutter button and the app takes about a second to load and then another half a second to sort of stabilize. This is a serious drawback for a phone that is being touted more as a camera than anything. If you would like to speed things up, you could just use the regular camera app, which performs a whole lot faster and does leverage the full resolution of the sensor, but it is Pro Cam that will allow you to use features such as lossless zoom and manual shooting controls that actually make the Lumia 1020 a photographer's phone.

In comparison the Sony Xperia Z1 flies. Not only does the phone go from standby to ready-to-shoot almost instantaneously, it can even fire off shots one after the other without any noticeable delay. What was incredibly disappointing about the Xperia Z1, which needs to be mentioned, is that the only way you can get the full 20 megapixel resolution out of this camera is if you shoot in manual mode. The logic and reasoning behind the resolution not being available in "iAuto" escapes us, making us feel as if Sony just might have dropped the ball. If you do get the Xperia Z1, make sure you change the dial to Manual (from iAuto).

The other two Lumia siblings do rather well, with a special note for the Lumia 920, which despite having older optics, does just as well as the Lumia 925. The LG G2 and the Samsung Galaxy Zoom were good too, especially given how we shoot with them. The Galaxy Zoom's forte is that it's an incredibly familiar shooting experience,



HTC One

given its form factor. The LG G2 has a strategically placed button on the back which somehow makes it convenient to press.

The HTC One and the iPhone 5 were impressive in their own right in our real world tests. Both fired off quick shots, but the iPhone 5 was visibly better than the HTC One in low light shooting, and just slightly faster to go from idle to shooting.

The one thing that we found slightly disappointing on the iPhone, the HTC One, the LG G2 and even the Samsung Galaxy Zoom was their need to fire up the camera using the icons on the screen. While the G2 and the Galaxy zoom do have physical buttons, they do not bring up the camera automatically. The HTC One and the iPhone don't have any physical buttons, but do come with icons that can be accessed directly from the home/lockscreen, but it's just not as fast as having a physical button.

If we talk pure image quality in the real world, the Lumia 1020 wins this too, but unfortunately, in the real world, there's more to performance than just pixel quality. The Pro Cam

app makes the Lumia 1020 slow, and since it's the only app that can actually leverage the mammoth sensor to the fullest, it's all the most frustrating. The Z1 breezes right ahead leaving even the Lumia 920 and the 925 in the dust (despite not even having optical image stabilization). The HTC One, despite the low resolution, does surprisingly well for its sensor,

and does produce good images, but the Lumias and the Xperia Z1 do better. The LG G2 and Samsung Galaxy Zoom are worth mentioning here. They seem to be at a slight disadvantage due to their small sensors, but very large pixel counts.

Video performance

Another bag of surprises came our way during our video testing. While we expected that the Lumia phones would top the roost, with their Carl Zeiss optics and image stabili-



Colour Rendition Sony Xperia Z1 left vs Lumia 920 right

zation, but it was actually quite a close call. The Lumias, and the Xperia Z1 were incredibly close in their video quality. While the Nokias came ahead in terms of audio quality, due to the "Rich Recording Technology" built into the phones. The Xperia Z1, however, stormed ahead in terms of low light autofocus. Overall, the Lumia 1020 was just a little bit better in retaining detail in shadows and highlights.






In the daytime, the Lumia 1020 charged right ahead of the competition. What's noteworthy is that pretty much all phones in the day time shoot some very impressive videos. However the Lumia 1020 had the best performance of them all, especially when it came to dynamic range. Where it did lose out a little was in terms of keeping up with the AF.

What we did find surprising was that the footage out of the HTC One was visibly lacking in edge sharpness, which is alright if your camera is static while filming, but can be pretty bad if you're trying to pan across a scene, or are trying to film someone running across the road for example. Still, the overall footage looked slightly soft, especially when put next to the iPhone 5.



Samsung Galaxy Zoom



Camera Phone Test					
					
Brand	Nokia	Nokia	Nokia	Sony	HTC
Model	Lumia 1020	Lumia 925	Lumia 920	Xperia Z1	One Dual
Price (in ₹)	49,999	33,499	32,319	40,500	47,499
Features (Out of 20)	14.6	13.4	13.3	13.58	11.43
Still Image Performance (Out of 40)	34.48	30.02	30.42	31.8	24.12
Video Performance (Out of 30)	23.1	21.9	21.45	22.35	17.25
Build Quality (Out of 5)	4	3.5	3.5	3.5	3.75
Ergonomics and usability (So 5)	4	3.7	4	3.8	4.1
Grand Total (Out of 100)	80.18	72.52	72.67	75.03	60.65
Specifications	73	67	66.5	67.9	57.15
Sensor resolution (MegaPixel)	41	8	8	20	4
Sensor size (mm)	1/1.5	1/3	1/3	1/2.3	1/3
Sensor type	BSI CMOS	BSI CMOS	BSI CMOS	BSI CMOS	BSI CMOS
Lens Construction	6 elements, carl zeiss	6 elements, carl zeiss	5 elements, carl zeiss	Sony G lens	HTC Brand
Lens Focal Length	25mm	26mm	26mm	29.7mm	28mm
Optical Image Stabilization	Yes	Yes	Yes	No	Yes
P/S/M mode	Yes	Yes	Yes	M only	No
Aperture	f/2.2	f/2.0	f/2.0	f/2.0	f/2.0
Startup Time	1 seconds	0.7 seconds	0.8 seconds	0.5 seconds	0.6 seconds
Battery Rating	2000 mAh	2000 mAh	2000 mAh	3000 mAh	2300mAh
Editing Suite (availability of quality editing apps)	Yes	Yes	Yes	Yes	Yes
Screen Type	AMOLED	AMOLED	IPS	TFT	Super LCD3
Weight	158	139	185	170	156
Build Quality (So 10)					
Body	8	7	7	7	8
Buttons and dials	8	7	7	7	7
Ergonomics and usability (So 10)					
Grip	8	7	8	8	9
Layout of buttons and dials	8	7	8	8	9
Intuitiveness of buttons and menu system	8	8	8	7	7
Menu layout, options and ease of use	8	8	8	7	7
Performance					
Studio Test					
Resolution Chart	9.5	7	7.5	8.5	6
Center Sharpness	9	8	8	8.5	7
Edge Sharpness	9	7	7	8	6
Color Reproduction	9	8	8	8	6
Contrast Reproduction	9	8	8	8	6
Distortion	8	7.5	7.5	7	7
Text Legibility	8.5	8	8	8.5	4
Real World Test					
Time from idle to first shot	6	7	7	8	7
Recycle Time (time between shots)	6	7	7	8	8
Dynamic Range	8	7	7	7	7
Low Light Performance	8	8	8	7	5
Burst Mode	3	5	5	8	8
Video Testing					
Daylight					
Dynamic Range	8	7	7	8	6
Colour Reproduction	8	7	7	8	7
Focus tracking	7	7	7	8	6
Audio clarity	8.5	8.5	8.5	8	7
Low Light Video					
Highlight Detail	8	8	8	7	5
Shadow Detail	7	7	7	6	5
Color Reproduction	7	7	7	7	6
Sharpness	8	7	6	8	5



What's up doc?

Who needs shots when you have an in-built doctor to give em to you on the go? Say hello to the injection implant

Camera Phones

BEST BUY
digit
NOVEMBER 2013



Samsung	LG	Apple
Galaxy Zoom	G2	iPhone 5
29,900	40,489	45,900
13.88	12.88	11.42
28.12	30.3	31.26
18.15	19.2	19.95
3.5	3.75	3.75
4.3	4.1	4
67.95	70.23	70.38
69.4	64.4	57.1
16	13	8
1/2.3	1/3	1/3
BSI CMOS	BSI CMOS	BSI CMOS
Samsung Brand	LG Brand	Apple Brand
24-240mm	29mm	33mm
Yes	Yes	No
Yes	No	No
f/3.1-6.3	f/2.4	f/2.4
0.7 seconds	0.5 seconds	0.5 seconds
2330mAh	3000mAh	1440 mAh
Yes	Yes	Yes
AMOLED	True HD+IPS	LED Backlit IPS
208	143	112
6	7	8
8	8	7
9	9	8
9	9	8
8	7	8
8	7	8
7.5	8	7.5
7	7.5	8
6	7	7
7	8	9
7	8	9
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7	7	7.5
6.5	7	7
6	7	7
6	7	7
6	7	7
7	8	8
7	7	8
6	6	6
5	5	5
6	6	6
6	6	7

A few extra considerations

Obviously, the primary function of any camera is to take images, the cellphone adds a new layer to the experience by adding post processing capabilities to the process. While all phones and their built-in camera apps offer some level of editing capabilities such as cropping, straightening etc., enthusiasts might want a little extra.

It is in this regard that we felt that the iPhone 5 was at the highest advantage, leveraging the hundreds of editing apps available on the App store. Our favourite happens to be Snapseed, which offers not just a lot of editing styles, but also a great level of control. Then there is also Mextures that adds layers into editing, allowing users to apply various effects in varying degrees, all at once. The Android phones do enjoy a similar lavishness when it comes to editing apps, Snapseed being one (since it is now owned by Google) along with many others. The Lumias, unfortunately, suffer from a distinct lack of quality editing apps. While you will find plenty that give you the option of adjusting the basics, and even applying some effects, none of them are actually quite as polished as the iOS and Android apps.

Then there is the question of HDR and panorama apps. While the stock cameras on almost all phones now come with this feature, there is seldom the option of tweaking settings. When it comes to shooting HDR, all three platforms offer excellent choices but if you were to shoot in HDR with the Lumia 1020, you wouldn't expect it to weigh 38 megapixels. Apps built with the new SDK are yet to populate the Windows phone store.

For panoramas, the stock apps are, good, but the MS Photosynth app, available for iOS and Windows phone is one of our favourites. The optics on all the camera phones are excellent for daytime shooting of panoramas, however, if you were looking at taking nighttime panos, the Lumia 1020 would be your best choice. The camera grip accessory makes it compatible with any standard tripod, allowing you to shoot with it whenever, wherever.

Conclusion

It's incredibly tough to pick winners from this basket of eight phones, if we were to look at it subjectively. Our test was designed for mostly higher end cameras, but seeing how the new age cellphone cameras seek to uproot the point and shoot as your trusted daily companion, we felt it only fitting that these phones be subject to the same rigors.

Looking at pure performance scores, the Lumia 1020 comes out ahead of the rest by quite a noticeable margin. It has a large sensor and an incredibly high pixel density when it comes to picture quality, but factor in startup times and time between shots, and it loses a few points. In terms of pure image and video quality, the Lumia 1020 is absolutely the king, but the slow performance of the Pro Cam app can be slightly annoying while using this otherwise great phone. However, no app would give the kind of extensive control Pro Cam can give you on any of the Lumia phones, with the 1020 being the most suited for the app. With Pro Cam, the Lumia 1020 can shoot images with the maximum resolution of 38 megapixels and creatively reframe the photograph later if needed. It offers lossless digital



Aereo Droid

Broadcast over IP with Aereo now available for android devices. Take a look: <http://dgit.in/Aereodroid>



Wascally Wabbit

These poor guys may just end up being the next 'in' thing in the world of fashion

zoom and spits out a final image that is 5 megapixels in resolution for web use. The Lumia 1020 is a little pricey, but it offers the absolute best image and video quality in a camera phone today. For this, we award the **Best Performer** award to the Lumia 1020.

If you are looking for something that's a delicate balance between price and performance, then the Samsung Galaxy Zoom would be your best option and so it wins the **Best Buy** award. It has fairly decent optics and given the form factor which resembles a point and shoot camera anyway, it shouldn't be hard to get used to using this as a camera. However, what could be a problem is carrying it around, seeing how the phone is actually quite bulky (bulkier than many point and shoot cameras even).

If Windows phone isn't your flavor of OS, but you're still craving the best imaging capabilities available in an OS, the Sony Xperia Z1 is where you should be aiming your credit card. It's got a gorgeous 5 inch screen with a pixel density of 441 ppi and is powered

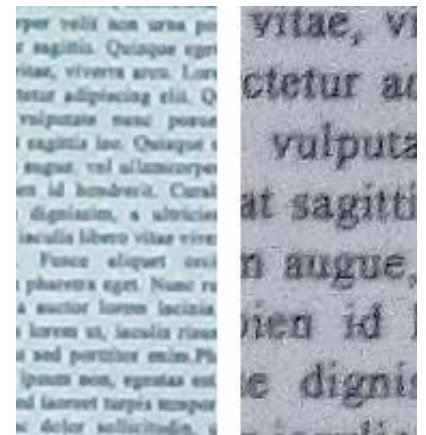
by Sony's Triluminous display technology. Camera wise, it's got a large, 20 megapixel sensor straight out of Sony's point and shoot range and paired up with the G lens, this phone placed second in our shootout. What we love about the camera on the Z1 is that it's incredibly fast, an area where the Lumia 1020 falters. The Z1 not only starts up very fast, but has a very small interval between shots, which is good. In terms of image quality, it's definitely far ahead of a standard cellphone camera, bordering on the point and shoot arena. It's a great camera, but with one serious downfall. Though the sensor is 20 megapixels, any shooting mode, except for manual will only shoot at a reduced resolution. If you want to get the most out of the camera, you will have to switch to manual mode (for maximum resolution) and probably will also have to learn how to play around with the settings. While this can be cumbersome, we do feel that the Xperia Z1 is a great camera phone, and for that, we give it the **Editor's Choice Award**.

The LG G2 as a camera is also a very competent device, though it's not a show stopper. However, if you are incredibly self-obsessed or love taking group shots with yourself in them, then you would love the G2's innovating shutter button. If you value colour accuracy on your screen, then the IPS panel on the LG G2 would be quite a pleaser.

The HTC One Dual Sim variant was an ambitious little device from the Taiwanese company and while it does a decent job with photos and videos, the small megapixel count just doesn't cut it in today's world of high resolution demands. While 4 megapixels are good

enough to upload to the web, when you take a really great shot of the mountainside and want a large 18x24 inch print of it is when you'll curse the HTC One.

The Lumia 920 and 925 are excellent camera phones. The 920 in fact was a game changer for Nokia, and the only reason it couldn't pick up market share was because it was very bulky and heavy (clearly these guys hadn't tried out the Samsung Galaxy Zoom). The Lumia 925 was Nokia's attempt at fixing the weight and bulk issue by shipping the phone in an incredibly slim all-aluminium construction. The camera on the two phones is near identical, despite an additional lens element in the Lumia 925. The Lumia 920 still remains our preferred device though, mostly because the heft actually stabilizes the camera a little while shooting and also because the IPS screen is very accurate in displaying colours. While the Lumia 920 has an MRP of



Xperia Z1's sensor performs much better than the ultrapixel-laden HTC One

₹32,319, the phone can be found on various online market places for anything between ₹20,000-25,000, which is a GREAT price for this phone.

Last, but most definitely not the least, the iPhone 5. Apple has never chased anyone else's standards but their own. Everyone may pack double digit megapixels into their sensors, but Apple has always stuck to the "quality over quantity" mantra. The iPhone 5 is the prime example of that, coming with a modest 8mp camera and a not-so-wide 33mm lens. The iPhone 5 also has at its disposal the most extensive suite of apps related to photography, be it for editing, sharing or even portfolio management. If you want a phone with a decent camera that will get the job done then the iPhone 5 could be for you, provided you can afford it!

So there you have it folks, the Nokia Lumia 1020 our Best Performer, the Samsung Galaxy Zoom the Best Buy and the Sony Xperia Z1 the Editor's Pick. However if you're looking for cheaper alternatives to these GREAT camera phones, do make sure to give the Lumia 920 a serious thought. Even if it is a bit old now, it still has a lot to offer. **f**



LG G2's back panel

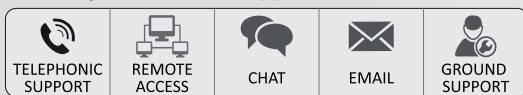


Apple iPhone 5

Your smart gadgets deserve nothing but the smartest protection.

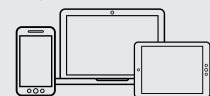


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The spy game

Take a look at this article to know more about spies and their clandestine lives
<http://digit.in/16uYqXV>

EA appoints new CEO

EA veteran Andrew Wilson was appointed as the new CEO of Electronic Arts, replacing John Riccitiello. He'll be paid an annual salary of \$800,000



Rootin Tootin Routers

Super fast routers go head to head in this shootout featuring both single and dual band routers

devices have scaled up a bit and maximum throughput is currently 600 Mbps on the 2.4GHz band and 1300 Mbps on the 5 GHz band. If you'd have paid any attention to these figures then having 600 Mbps on the 2.4 GHz should've stood out since it was limited to 450 Mbps till now. The increment is due to a new modulation algorithm, 256QAM (Quadrature Amplitude Modulation); currently only Broadcom has this technology so you can expect Broadcom-to-Broadcom communication to hit the 1900 Mbps limit while all other devices will still be limited to 1750 Mbps. Broadcom calls this TurboQAM and we saw it in action in the ASUS PCE-A68 that we used as a reference card in our test.

We also saw our first Dual-core processor based router – ASUS RT-AC68U which has a Broadcom BCM4708A. Rated at 1GHz, this processor is faster than that on a lot of the smartphones we have in the market. Let's hope this doesn't kick off

an unnecessary CPU war in this category though.

Interface

Something that usually gets overlooked is the firmware that routers ship with. Most manufacturers seem to be deliberately restricting the functionality of lower-end routers to push their higher-end models. As long the router supports custom firmware such as Tomato or DD-WRT and others, you shouldn't be worried about this. That being said, installing the said custom firmware does require a fair amount of networking and programming knowledge and it isn't something that amateurs should take lightly.

Of note here is ASUS, which is doing something that we wish more manufacturers would do, namely, releasing the source-code to their firmware! This is a boon for geeks the world over and something that should translate to increased sales considering the increased customisability

Mithun Mohandas
readersletters@thinkdigit.com

There is a minor caveat though, most devices will probably be based on the draft 802.11ac specifications. Nevertheless, the tech grapevine is rife with rumours regarding the next 802.11ac capable mobile device, laptop and tablet.

So what's new?

Well pretty much nothing actually. The current 802.11ac

Picking up an 802.11ac certified router would have been almost impossible last year, given the rarity and price of compatible devices. Things have changed though and 802.11ac can now be officially labelled as mainstream.

Dark Souls II

Namco Bandai have officially confirmed the launch of its flagship Dark Souls II for North America, Europe and Japan



Laser communiqué

Do you think it's possible to communicate via lasers? Find out more at the link below <http://dgit.in/LidGJ4z>

Wi-Fi routers

that their routers offer. In fact, ASUS's firmware in their mid to high-end routers is based on open-source firmware called ASUS-WRT.

Coming back to the matter at hand, the routers that we received were quite feature-rich. However, we're pretty sure that most people will not even look beyond compatibility with their Internet connection and the speed on offer. Especially for such users, Belkin has one of the most beginner friendly UIs we've seen so far. It's like looking at one of those textbooks that you'd have in kindergarten. You simply cannot make a mistake.

D-Link, ASUS, Netgear and Trendnet have interface that are for those of you who can configure their own routers and don't need the extra help. TP-LINK has maintained the age-old familiar interface and we still appreciate the simplicity and comfort of having all configurable options on the left column. Navigating through TP-LINK's interface is the fastest since all changes made are saved temporarily and do not come into effect until you reboot the router. Most other manufacturers have a mini-reboot each time you modify any parameter and it can be quite painful when you have to set up over 20 routers in a day.

Digisol has some good products that work wonderfully and provide a stable bandwidth under full load conditions, however, their interface on entry-level routers needs a lot of work. Since it's an Indian brand very few open-source volunteers can get their hands on these devices and hence the prospect of seeing an open-source firmware on these devices is far-fetched.

HOW WE TESTED

1. Preparation

Creating an ideal test environment in our office was near impossible, but we did our best to ensure a minimum of interference from outside sources. We disabled as many unnecessary routers as we could and even the essential ones were switched to other channels. As a real world environment at least, we were all set.

Each router was assembled and connected to the Internet for firmware upgrades if required. Certain routers wouldn't get past the QIS screen unless connected to an RJ11 jack and those we promptly dropped as we didn't have a DSL line to spare. After upgrades, the routers were hooked up to a test rig for initial setup and individually tested as required.

To maintain a fair playing field, all routers were switched to mixed mode a/b/g/n/ac mode and open authentication was used. These routers were not connected to the internet during the testing phase so as to avoid unnecessary loss in performance. Also the orientation of the router was adjusted to ensure maximum signal strength at both client locations.

Two machines were used – One was connected using a CAT6 ethernet cable directly to the router's LAN port while the other was connected wirelessly at a fixed range. Each machine connected was pretty much top of the line with more than enough read and write speeds owing to 2x SSDs in a RAID 0 configuration. Needless to say there wouldn't be any bottlenecks at these locations.

Build quality

They being routers, we didn't really expect to see metallic bodies, especially on those with internal antennae, but we did expect some to see some robust

Machine 1 (Client) Configuration:

Processor: Intel Core i7 3770K
Motherboard: ASRock Z77 Extreme 4
Primary drive: OCZ Vector 256 GB
RAM: Kingston HyperX 2x4GB @ 2133 MHz
Endpoint: ASUS PCE-AC68
Endpoint: Trendnet TEW-805UB
SMPS: Corsair RM650
Cabinet: Cooler Master HAF-XM

Machine 2 (Server) Configuration:

Processor: Intel Core i7 4770K
Motherboard: ASRock Z87 Extreme 6
Primary drive: Kingston HyperX 2x120GB SSD in RAID 0
RAM: ADATA 4x4GB @ 2333 MHz
SMPS: Cooler Master 850W

2. Endpoints:

The endpoints used on the client side was primarily the ASUS PCE-A68 owing to the ridiculous bandwidth it provided on all three channels. TurboQAM modulation was enabled and the antennae were adjusted according to the recommended specifications. In case the ASUS PCIE WLAN card didn't connect to a particular router then the Trendnet TEW-805UB was used. The Trendnet endpoint was used at multiple locations to simultaneously fill up the router bandwidth. We made use of two TEW-805UB for this purpose.

3. Tools used

We wished to ensure that the software that we used could be used by anyone reading the article

The Tamosoft Throughput tool was used to flood the router with

both TCP and UDP traffic to figure out how the default QoS settings worked. LST Speed Test and LST Server were used to replicate the same results. In Zone2 we faced a little problem regarding UDP traffic, almost all packets were getting dropped in Tamosoft and so we used iperf to test TCP and UDP traffic in Zone2. There was a little hassle involved in the same given that Linux drivers for the ASUS PCE-A68 were yet to be released. Hence, we used the windows drivers encapsulated with the ndiswrapper to test throughput. Needless to say, TCP bandwidth was given greater weightage than UDP bandwidth.

WirelessMon was used to monitor the Wi-Fi signal strength. Pinging the machines was done via the command prompt.

For file transfer tests were performed on both the 2.4GHz and 5GHz bands. A single 100MB file and an assorted collection of files totalling 100MB were used at 2.4GHz; a single 1GB file and an assorted collection of files totalling 1GB were used at 5GHz.

For HD media streaming tests, we used a true 1080p movie compressed to mkv and streamed via VLC using TCP. All playback above 12500000bps on the client was considered a stutter free experience.






Performance testing was purely objective in nature while feature scoring was subjective as always. The routers were, obviously, classified into single-band and dual-band categories for this test.






plastic shells at the very least. In the latter department we were a bit disappointed, with only the Edimax BR-6478AC, Digisol DG-BR4000N\E and the Netgear JNR3210 having






a tough exterior and of heft to them, (sigh).

Almost all high-end routers had good build quality though and seemed capable of taking a few falls. The one issue here



Dual Band Routers										
Brand	ASUS		Belkin		Belkin		D-Link		D-Link	
Model no.	RT-AC68U		AC1200DB		N600DB		DIR-810L		DIR-868L	
Price in ₹	18,000		14,999		6,499		3,799		11,999	
Features										
Total LAN ports / Gigabit ports	5 / 5		5 / 4		4 / 0		5 / 0		5 / 5	
Antennae (External/Internal)	External		Internal		Internal		Internal		Internal	
No. of Antennae	3		2		4		2		6	
Antenna gain (dBi)	NA		NA		NA		NA		NA	
Total USB/ USB 3.0	2 / 1		2 / 0		1 / 0		0 / 0		1 / 1	
Data Rate (Mbps)	1900		1200		600		750		1750	
Wi-Fi Hardware Switch	Y		N		N		N		N	
Inbuilt ADSL2+ modem	N		N		Y		N		N	
Surge Protection	N		N		N		N		N	
Multiple SSIDs / Guest	Y		Y		Y		Y		Y	
Parental / Access Controls	Y		Y		Y		NA		Y	
UPnP	Y		Y		Y		Y		Y	
VPN Support	Y		Y		Y		Y		Y	
PPPoE support	Y		Y		Y		Y		Y	
WPS Button	Y		Y		Y		Y		Y	
Warranty (years)	3		3		3		3		3	
DD-WRT/Tomato support	Y		N		N		N		Y	
Dual CPU	Y		N		N		N		N	
Range Extender (WDS)	NA		N		N		N		N	
Performance Tests	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
Throughput test (2.4 GHz) (mbps)										
TCP Down	66.15	44.3	25.21	19.8	21.57	14.6	34.82	13.1	60.83	45.2
TCP UP	71.27	62.92	66.7	20.1	44.83	37.2	69.4	23.8	104.72	67
UDP Down	116.12	9.84	11.97	9.93	21.5	7.21	42.05	4.11	103.53	10
UDP Up	87.71	9.92	65.16	9.34	65.92	9.49	71.15	9.92	89.36	8.59
Steaming HD video (megabits/second)										
	12.69	13.90	10.91	11.94	11.03	12.06	12.56	10.09	13.53	12.88
Signal Strength (dBi)										
	35	47	49	53	61	66	44	61	46	54
Ping (milliseconds)										
	0	2	7	4	1	14	6	423	2	5
File Transfer Read and write time combined										
100MB assorted	24.91	44.14	44.48	73.98	51.08	85.45	33.7		18.83	34.46
100MB sequential	21.38	34.02	43.13	63.86	51.14	82.4	32.63		16.34	29.5
Throughput test (5 GHz) (mbps)										
TCP Down	144.49	187	139.73	53.3	63.32	14.4	74.72	83.9	131.63	157
TCP UP	190.04	190	160.39	52.6	73.49	12.3	92.53	76.6	175.99	137
UDP Down	731.64	10	503.66	10	43.68	11.2	95.33	10	694.73	13.8
UDP Up	169.81	17.7	166.11	9.71	50.49	5.82	95.19	9.74	161.1	9.73
Steaming HD video (bits/second)										
Star Trek bps	12.63	14.86	15.5	13.16	12.97	8.47	13.07	13.04	12.99	12.17
Signal Strength (dBi)										
	36	50	47	71	52	72	48	68	49	56
Ping (milliseconds)										
	0	18	4	0	2	4	5	0	130	143
File Transfer Read and write time combined										
1GB assorted	49.51	56.62	105.48	297.05	34.56		189.32	208.94	43.19	62.68
1GB sequential	30.12	53.69	77.49	257.98	30.67		185.43	198.65	35.48	56.33

									
Edimax		TP-LINK		TP-LINK		Trendnet		Trendnet	
BR-6478AC		TL-WDR4300		TL-WDR3600		TEW-812DRU		TEW-811DRU	
13,500		8,999		6,999		15,550		7,700	
5 / 5		5 / 5		5 / 5		5		5	
External		External		External		Internal		Internal	
2		3		2		NA		NA	
3		3		3		NA		NA	
0 / 0		2 / 0		2/0		1/0		1/0	
1200		750		600		1750		1200	
Y		Y		Y		N		N	
N		N		N		N		N	
N		N		N		N		N	
Y		Y		Y		Y		Y	
Y		Y		Y		Y		Y	
Y		Y		Y		Y		Y	
Y		Y		Y		Y		Y	
Y		Y		Y		Y		Y	
3		3		3		3		3	
N		Y		Y		N		N	
N		N		N		N		N	
Y		Y		Y		Y		Y	
Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
22.67	52.7	10.78	24.4	40.36	36.9	11.74	9.46	22.97	3.54
85.57	67.3	29.66	33.4	40.32	30.3	61.2	33.9	50.3	2.77
33.27	9.93	8.59	10	49.21	9.88	10.35	9.3	25.52	10
107.22	10	156.95	10	195.92	10	82.94	10	56.03	1.78
12.14	12.55	8.89	11.81	13.24	12.61	10.11	11.21	12.62	4.54
53	54	59	60	49	52	61	72	59	63
494	0	1	4	624	0	1	30	3	7
61.08	25.91	107.81	45.52	25.62	19.94	87.01	86.99	63.33	597.17
107.88	24.06	100.15	42.41	24.2	22.6	76.59	171.26	61.77	462.45
102.9	141	112.74	66.9	114.49	149	135.31	139	124.55	139
145.85	116	54.79	31.5	32.44	32	160.88	109	156.33	116
288.62	9.94	245.22	9.94	224	10	544.68	9.94	535.46	10
141.42	10	116.77	10	122.3	10	156.49	9.94	145.65	10
12.59	12.64	13.05	12.49	13.01	12.62	12.76	12.76	12.79	12.69
50	59	60	77	48	60	49	59	42	56
0	0	3	0	2	0	0	0	0	96
77.71	114.84	85.57	194	103.23	109.2	93.57	111.07	59.06	149.49
63.17	105.33	81.7	176.5	100.45	101.5	63.81	83.14	53.32	79.26

Single Band Routers										
Brand	ASUS		ASUS		Digisol		Digisol		Digisol	
Model no.	RT-N12HP		RT-N10E		DG-BR4313NG		DG-BR4000NE		DG-BG4100N	
Price	4,500		1,300		2,300		1,300		2,000	
Features										
Total LAN ports/ Gigabit ports	5 / 0		5 / 0		5 / 0		5 / 0		4 / 0	
Antennae	External		External		External		External		External	
No. of Antennae	2		1		2		1		1	
Antenna gain (dBi)	9		5		3		3		2	
Total USB/ USB 3.0	0 / 0		0 / 0		1 / 0		0 / 0		0 / 0	
Data Rate (Mbps)	300		150		300		150		150	
Wi-Fi Hardware Switch	N		N		Y		N		N	
Inbuilt ADSL2+ modem	N		N		N		N		Y	
Multiple SSIDs / Guest	N		N		N		N		Y	
Parental / Access Controls	Y		N		Y		Y		Y	
UPnP	Y		Y		Y		Y		Y	
VPN Support	Y		N		N		Y		Y	
PPPoE support	N		Y		Y		Y		Y	
WPS Button	Y		Y		Y		Y		Y	
Warranty (years)	3		3		5		5		5	
DD-WRT/Tomato support	N		N		N		N		N	
Range Extender (WDS)	Y		Y		N		Y		N	
Performance Tests	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
Throughput test (2.4 GHz) (mbps)										
TCP Down	53.29	41.4	4.99	4.44	52.79	31.3	62.52	29.5	38.95	54.3
TCP UP	88.94	64	7.79	34.4	69.76	39.6	72.59	17.3	50.34	48.7
UDP Down	92.94	10	67.9	10	90.86	10	91.23	10	51.16	9.98
UDP Up	95.08	10	3.61	10	66.11	9.21	67.84	10	46.39	10
Steaming HD video (megabits/second)										
	13.14	12.58	12.28	12.32	14.84	12.83	12.98	4.87	12.81	13.16
Signal Strength (dBi)										
	45	42	40	48	45	51	40	63	39	49
Ping (milliseconds)										
	505	1	95	4	50	27	8	566	7	0
File Transfer Read and write time combined										
100MB assorted	40.79	32.49	30.88	61.81	28.24	34.63	24.71	161.01	42.31	38.63
100MB sequential	46.94	43.2	30.39	39.68	25.57	35.6	21.63	343.42	36.61	37.89

was with the ASUS RT-N12HP which seemed to be lacking a bit of thought in the design. That router featured ridiculously long and heavy antennae (9dBi), but the router wasn't weighted to compensate for the high centre of gravity and we ended up tipping the router over every time we wanted to adjust the antennae.





Having external antennae is a major factor when deciding on a router as you get the freedom to orient them in the direction you prefer. You can also extend the antennae using SMA connectors and even hide your routers somewhere with antennae poking out at just the right spots. Routers with internal antennae are good if

for some reason, you're considering their aesthetical value.

Performance

An improvement in throughput was expected due to the ac specifications and most routers didn't disappoint though there were a few that didn't perform as expected in Zone 1 as well as Zone 2. There were some basic

authentication issues when the routers were set to open authentication which is quite the opposite of what should have been. Regardless of authentication, most routers we tested didn't have a steady rate of data streaming. The graph seemed to be on a roller coaster ride with frequent spikes every now and then. There were two

							
Netgear		Netgear		TP-LINK		TP-LINK	
JNR1010		JNR3210		TL-WR720N		TD-W8968	
1,951		5,037		1,499		3,099	
5 / 0		5 / 5		3 / 0		4	
External		External		Internal		External	
1		2		NA		2	
5		NA		5		5	
0 / 0		1 / 1		0 / 0		1 / 0	
150		300		150		300	
Y		Y		N		Y	
N		N		N		Y	
Y		Y		Y		Y	
Y		Y		Y		Y	
Y		Y		Y		Y	
Y		Y		Y		Y	
2		2		3		3	
N		N		N		N	
Y		Y		Y		Y	
Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
34.47	33.7	53.94	98.5	15.45	48	25.91	36.6
46.86	52.2	73.52	46.8	43.93	53.1	60.12	48.8
47.52	9.94	76.8	10	17.85	9.97	26.34	9.94
40.25	10	64.5	10	59.36	10	95.57	9.71
13.22	12.31	12.92	12.72	11.4	12.89	12.61	12.87
45	56	46	47	48	49	45	49
27	3	2	0	533	9	2	2
39.94	51.38	27.85	40.56	67.17	48.83	32.9	40.13
38.62	43.98	29.44	33.45	54.78	41.55	34.12	54.78

exceptions to this phenomenon though, the D-Link Belkin AC1200DB and the D-Link DIR-868L. The Tamosoft output of these two routers maintained a steady gradient throughout that particular test. The Belkin AC600DB on the other hand didn't perform well at all. We don't know whether to chalk it up to a messed up

firmware or the placement of the internal antennae but we weren't expecting such results. The TP-LINK WR720N did get past the threshold for HD video streaming but it experienced periodic spikes which was also evident when we were pinging the device, where it averaged 533ms in Zone1. These spikes did interfere with the HD

streaming in a not-so-subtle manner. Digisol routers performed rather well which does compensate for the lack of attention paid to the firmware. The ASUS RT-AC68U turned out to have the highest throughput of them all.

The one thing that we can take away from these tests is that you really don't need an

expensive router unless you have 8-10 devices that really hog bandwidth. Do consider the features on offer across the spectrum as well.

Winners:

Best performer

ASUS RT-AC68U

Aside from the obvious advantage of being a dual band router, the RT-AC68U is packed to the hilt with features. Thus, not only is it capable of an insane throughput but is versatile enough to be adopted into different roles. The only downside is the price at which it comes - ₹18,000. There are very few people who'd need to invest in this behemoth.

Best Buy Single Band

Digisol DG-BR4000N/E

A Digisol router has made it to the podium owing to a stable throughput and a mix of features all put together at the right price. The firmware might be a bit cumbersome to deal with but once it is setup properly it works without any issues. Overall, it was the price to performance ratio that won it the award.


Best Buy Dual Band

D-Link DIR-810L

This router is very discrete with its internal antennae. Great signal range and a good firmware secured this devices Best Buy award.

Editor's Pick

TP-LINK TD-W8968

This router not only features great performance, but also a great price as well. The Digisol router narrowly beat it to Best Buy, but this is one great router and it gives you ADSL2+ support, 8dBi antennae and a great UI. An excellent choice for almost any occasion. 

Origin of Music

So where do you think music came from? Opinions may differ, but see what this guy has to say <http://dgit.in/163hLCC>

Cygnus Gone

Cygnus is a commercial freighter constructed for the International Space Station. What happened to it? <http://dgit.in/17fpaS9>



More than just PCs

Desktop PCs are evolving thick and fast to do more than just stay relevant. We test and review 11 fancy all-in-one PCs from leading manufacturers to help you pick the right one.

Jayesh Shinde

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With the whole post-PC rhetoric, one wonders if any desktop formats are a lucrative business anymore. You'd be surprised to know that far

from being consigned to the doldrums of history, the PC continues to reinvent itself and fights on. Nowhere is this trend more evident than among all-in-one desktops – sleek, sexy specimens that are taking the draconian desktop to unforeseen places that it once dreamt of in happier times. After a brief

lull last year, we're seeing a lot of interesting all-in-one desktops in the market, especially from HP and Lenovo, and they sent pretty much their entire product portfolio for us to test and review in this feature – along with a lone candidate from Dell.

We've been tracking the all-in-one desktop space keenly

over the past several years, with the firm opinion that every other manufacturer in the space was trying to emulate the Apple iMac's magic. However, improving hardware standards and the growing influence of smartphone and tablets is reflecting on the all-in-one desktop space. Brands



Gadget Disruption

HTC seems to be overconfident about leaving its mark. Follow the link to find out more <http://dgit.in/1a785u2>

Television Overtake

Netflix may be taking HBO for a ride with respect to subscribers <http://dgit.in/1cX61mU>

Desktop All-in-ones Test

HOW WE TESTED

Whenever we receive any products for review, we take a lot of care to ensure they're judged on a level playing field. For this, we created our own partition on their hard drives, installed our own copy of the 64-bit version of Windows 8 OS, ensure none of the key hardware drivers were missing, and of course perform a Windows update once before proceeding with our system benchmarks. The screens were kept at maximum brightness and so was the audio volume. Finally, we disconnected the all-in-ones from the Internet or any other local network to keep them completely isolated.

Benchmarking

We benchmarked the all-in-ones under High Performance mode (including other advanced settings which prevent hard drive idling, sleep, system hibernation, etc., that keep the machine in an always-on state) in the Power Settings of the Control Panel to ensure we stressed the machines enough. We ran through a whole gamut of Futuremark benchmarks, including PC Mark 8, 3D Mark, and Peacekeeper; not to mention Maxon's Cinebench to test both the system's CPU and GPU, respectively. All these

industry standard benchmarks do a very good job of running standard scripts to gauge a system's Web browsing, photo and video editing, casual gaming, and multimedia capabilities. We also took a look at PixPerAn and Lagom.nl's test parameters to ascertain the viewability aspects of the screen of all these all-in-one desktops – parameters that included text readability, contrast, colour gradient, black level and white saturation.

Real-world testing included browsing the Web, watching movies and listening to music – which pretty much all machines in here are capable of handling. We also watched high bit-rate Blu-ray rips in MKV format to judge each machine's HD movie playback and ran through a whole host of our audio test files to check the onboard sound quality at different volume levels. On products that came with a discrete GPU, we tried some gaming as well, just to see if they could handle it. As always, we scored these aspects of the products on a scale of 1 to 10.

Feature listing

After this the specs and features of every all-in-one desktop were listed and weighed. We

didn't assign points to core hardware components (since its impact is felt in our performance benchmarks, anyway), but scored products based on aspects like the number of connectivity ports, screen size, type of panel, whether they support touch-input or not, stereoscopic 3D, active shutter 3D glasses, etc. We also considered preloaded software including backup and restore apps, cloud syncing tools, webcam software, and any other uniquely interesting, non-bloatware programs as valuable additions to the product. Ultimately, the more features provided by a product the better, obviously, and that's exactly what we looked for.

Build and design

While design and appeal is a matter of immense personal taste and subjectivity, the choice of components and basic ergonomics, however, isn't. Desktops that had metal stands or exterior as opposed to plastic were graded higher, so were products that had a flexible orientation (tilt forward, backwards, conceal its stand to become a tablet, etc.) compared to rigid, unwholesome boxes. We also graded keyboard and mice here in terms of their overall usability.

know that consumers' tastes are evolving and improving – even while picking AIOs – and any brand that shortchanges them does so at their own risk, with the danger of being dropped off the customers' radars permanently. The all-in-one desktops we received this month for testing were all sleek and sexy in their own right, be it the most inexpensive sub-₹30k desktop or a rather large 27-inch desktop-tablet hybrid priced at over ₹1.3 lakhs.

We're glad to report that almost all AIOs now ship with a de facto wireless keyboard and mouse combo, keeping the cable clutter on your desk to a bare minimum. Also, one of your truly's perpetual dreams to see "portable" AIOs (or is it more appropriate to call them giant tablets?) featuring built-in bat-

teries is finally being realized. According to our scoring sheets, the bare minimum number of features available in any AIO sold now, compared to two years ago, has increased and improved. We got more products than what we featured in the pages here, and over 90 per cent of the products we tested were all good and highly recommendable. That's a huge improvement over 2011, the last time we did an all-in-one desktop comparison. The playing field was much smaller at the time and the quality of majority players not of the highest order.

Below ₹50,000

If you thought lower-priced products are *always* inferior to their higher-priced counterparts, you'll be pleasantly surprised to know that this

month's **Best Performer** – the HP Pavilion 21 – edges out the rest of the competition quite comfortably. The combination of a good processor paired with very good graphics running on a 7200 rpm drive supported ably by an adequate quantity of RAM is just too much for anyone to handle. The fact that it outperforms some of its higher-priced brethren (a la the two 23-inch HP AIOs) is a strong testament to its unique build. What's surprising is that not only does the Pavilion 21 kick every other PC's collective derriere in terms of raw, benchmark scores, it also does a stellar job of passing our real-world tests with great aplomb – including stuff like watching 1080p video, better-than-average onboard speakers, and a vibrant Full HD display. We even did some casual

gaming on the thing, and you can get by on most of the latest games at medium settings. It doesn't stop there; the machine is quite petite, compact and well-built and its keyboard and mouse are great to work with as well. Having three years of warranty – which is the highest here – is another thing going for the HP Pavilion. Yes, it doesn't have a touch-enabled screen (how often will you touch your PC's screen, seriously?) and it can't be used as a TV out-of-the-box, but at its aggressive price, it more than justifies the purchase if you're looking for a solid, high-performing, space-saving PC alternative for your old and aging desktop.

Coming to the next best AIO in this price bracket, the Lenovo IdeaCentre C340 is also a very good machine,

Under Rs. 50,000						
Brand	HP	Lenovo	Dell	Lenovo	HP	
Model	18-1106in	IdeaCentre C340	Inspiron One 2020	IdeaCentre C440	HP Pavilion 21-a255in	
Price (₹)	28,990	38,490	45,090	47,490	48,990	
Warranty	3 yrs	2 yrs	1 yrs	2 yrs	3 yrs	
Features (of 30)	9.13	13.64	12.7	16.89	12.94	
Performance (of 50)	13.42	26.36	29.16	18.13	41.41	
Build and Usability (of 20)	6.64	9.83	9.14	10.17	8.28	
Overall (of 100)	29.19	49.83	50.99	45.19	62.62	
CPU	AMD E1-1200 APU	Intel Core i3-3220	Intel Core i3-3240T	Intel Celeron G540T	Intel Core i3-3240	
Number of cores	2	2	2	2	2	
Processor Speed (MHz)	1400	3300	2900	2100	3400	
RAM (GB)	2	2	4	2	4	
Graphics	AMD Radeon HD 7300	Intel HD 2500	Intel HD	Intel HD 2000	Intel HD 2500 / NVIDIA GeForce GT 720A	
Dedicated Video Memory Size (in MB)	384	NA	NA	NA	1024	
HDD Size (GB)	500	500	1000	320	1000	
OS	64-bit Windows 8	64-bit Windows 8	64-bit Windows 8	64-bit Windows 8	64-bit Windows 8	
Media Center Remote	N	N	N	Y	N	
Screen Size (Inches)	18.5	20	20	21.5	21.5	
Touchscreen?	0	0	1	1	0	
Type of Panel = is it IPS?	0	0	0	0	0	
Screen Resolution (Pixels)	1	4	4	5	5	
HDMI (in / out)	0	2	0	2	0	
TV (Cable) in + Composite?	0	0	0	1	0	
Built-in BATTERY?	0	0	0	0	0	
Stereoscopic 3D?	0	0	0	0	0	
No of Ports (USB 2.0)	4	6	5	4	4	
USB 3.0 (Y/N)	2	0	0	2	2	
Connectivity (LAN / Bluetooth / Wi-Fi)	3	3	3	3	3	
Built-in TV Tuner?	0	0	0	1	0	
Headphone/Mic (1/1)	2	2	2	2	2	
Wireless Keyboard & Mouse?	0	2	2	0	2	
SD Memory Card Reader (Y/N)	1	1	1	1	1	
Optical Drive (Y/N)	1	1	1	1	1	
Blu-ray? (Y/N)	0	0	0	0	0	
Inbuilt Webcam (Y/N)	1	1	1	1	1	
Benchmarking						
PC Mark 8 (Home)	1155	2659	2156	1150	3124	
3D Mark - Ice Storm	10478	24180	24540	8441	45605	
Cinebench R11.5 (Open GL)	6.77	9.12	9.49	4.52	28.47	
Cinebench R11.5 (CPU)	0.26	3.29	2.9	1.6	3.34	
PixPerAn Readability Test	11	9	10	9	12	
Lagom.nl - Contrast	6.5	8	7.5	9	9	
Lagom.nl - Gradient	8.5	9	9	6.5	6	
Lagom.nl - Black Level (out of 20)	18	17	15	18	17	
Lagom.nl - White Saturation (out of 12)	8	9	9	10	10	
Real World Tests						
Speaker volume (at 50%)	3.5	3	3	6	4.5	
Speaker clarity (at 100%)	4	5.5	6.5	7	7.5	
HD video playback test (So 10)	1	8.5	9	7	9	
WinRAR (Compression / Decompression)	493 KB/s	3439 KB/s	3537 KB/s	1624 KB/s	3774 KB/s	

NOTE: The Lenovo IdeaCentre A730's performance figures reflected here are exclusive of NVIDIA display drivers. Despite our best attempts, the machine only ran on Intel

Above Rs. 50,000					
HP	HP	Lenovo	HP	Lenovo	Lenovo
Pavilion TouchSmart 23-f201in	ENVY Rove 20	IdeaCentre B540	ENVY 23-d200in TouchSmart	IdeaCentre A730	IdeaCentre Horizon
58,990	69,990	75,990	80,990	1,25,990	1,36,990
3 yrs	1 yrs	3 yrs	3 yrs	3 yrs	3 yrs
17.77	18.38	20.61	15.87	24.24	20.53
39.54	18.46	33.26	34.86	35.87	38.51
7.76	11.03	10.52	7.76	13.62	11.38
65.07	47.88	64.39	58.23	73.72	70.41
Intel Core i3-3240	Intel Core i3-4010U	Intel Core i5-3330S	Intel Core i5-3470S	Intel Core i7-4700MQ	Intel Core i7-3537U
2	2	4	4	8	2
3400	1700	3033	3400	2400	3100
4	8	6	8	8	8
Intel HD 2500	Intel HD	NVIDIA GeForce 615	Nvidia GeForce 610M	Intel HD 4600 / NVIDIA GeForce GT 740M	Intel HD 4000 / NVIDIA GeForce 620M
1024	NA	2048	1024	NA	2048
1000	1000	1000	1000	1000	1000
64-bit Windows 8	64-bit Windows 8	64-bit Windows 8	64-bit Windows 8	64-bit Windows 8	64-bit Windows 8
N	N	Y	N	N	N
23	20	23	23	27	27
1	1	1	1	1	1
1	1	0	0	1	1
5	4	5	5	5	5
0	0	2	1	2	2
0	0	2	0	1	0
0	1	0	0	0	1
0	0	1	0	0	0
4	1	2	2	1	0
2	2	4	4	3	2
3	3	3	3	3	3
0	0	1	0	1	0
2	2	2	2	2	2
2	2	2	2	2	2
1	1	1	1	1	1
1	0	1	1	1	0
0	0	0	0	1	0
1	1	1	1	1	1
2656	1289	2531	2457	2722	2817
42916	11273	34696	32234	27387	43093
26.95	5.05	16.69	15.4	9.73	26.88
3.36	0.86	4.66	5.25	5.07	2.81
11	10	10	10	14	14
9.5	8	6	9	9.5	9.5
9.5	9.5	6	7	9.5	9.5
19	19	15	15	19	18
11	10	8	10	11	10
6	2	1	7	3	3
7	5	4	8.5	5	6
9.5	7	9	9.5	9	9
3290 KB/s	1563 KB/s	4338 KB/s	4486 KB/s	6935 KB/s	3799 KB/s

chipset and onboard Intel HD 4600 graphics drivers.



Bye-Bye Macbook

Apple decided to discontinue its 15-inch Macbook Pro, so what did it leave behind? <http://dgit.in/He08pd>

iOS 7 Upgrade

The new iOS 7 upgrade has some pretty distinct changes. Does it fix the bugs in the first version? <http://dgit.in/1cX7GJl>



hardly putting a foot wrong. It sports a contrasting design to the HP Pavilion 21 – which has a kick stand, only allowing it to lean backward – allowing its display to pivot about a hinge, not unlike an iMac. The C340's thick aluminium stand is easily among the best built ones we've come across in this test, giving the device great support and freedom of movement. It's available in two colours – white and black – and offers good overall performance and a feature set

that doesn't skimp on any of the essentials. What's more, apart from an HDMI-in port, the C340 sports a matte display that's great for watching movies too. Little things like the presence of a Rupee symbol on its keyboard (which is great to type on, by the way), and a robust set of proprietary software (Lenovo Vantage Technologies) including a rather helpful Education Portal tool makes it a well thought out product for a consumer on a budget, looking for a stylish,

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HP India	1243886238	www8.hp.com/in/en/contact-hp/contact.html	www8.hp.com
Lenovo India Pvt.Ltd	1 800 3000 9990	customercare@lencare.co.in	www.lenovo.com

no-nonsense AIO that does its job well.

Comparing this to the Dell Inspiron One 2020, a device that is very close to the IdeaCentre C340 in terms of overall performance and features, we see that the Dell Inspiron One 2020 loses out on build and design points. Plus, the fact that the Inspiron comes with a touchscreen sends its cost spiralling out of control.

It's the same story with Lenovo's IdeaCentre C440 which also features a touchscreen display (with Full HD support) and a built-in TV tuner card and media center remote. While the C440 has that unique TV-cum-PC thing going for it, its hardware and performance doesn't keep up with the 2020 or C440; it's even priced higher than the latter.

The choice couldn't be simpler. Consider the Lenovo IdeaCentre C440 for its TV-cum-PC functionality, with a touch-enabled screen and all other design characteristics, if that's what you're looking for. If you want a touch-enabled AIO with significantly better overall performance than the Lenovo C440, then check out the Dell Inspiron One 2020. If you don't give a hoot about either touchscreen displays or out-of-the-box TV functionality, and desire a well performing, sleek AIO desktop on a tight budget then look no further than the Lenovo IdeaCentre C340. It's our **Best Buy** recommendation – all things considered, a well deserved win.

We know that having high expectations from the cheapest

AIO in the comparison is asking a bit too much, but that doesn't absolve the HP 18-1106in of its poor showing. It had the lowest performance, had the fewest features, and failed to be anything more than a dull plastic box. The HP 18 couldn't play HD movies and it felt sluggish even while loading regular apps, not to mention the disappointing multitasking. On this evidence, it's hard to recommend the machine even if you're looking to buy one under ₹30k. In the absence of candidates from Lenovo and others, we advise you to spend a little extra and consider some of the other machines we mentioned earlier in this category.

Above ₹50,000

The higher end of the AIO market always promised to have some interesting, innovative and drop-dead gorgeous products on offer. And we weren't disappointed.

The HP Pavilion TouchSmart 23-f201in bags our **Best Buy** for the category and for good reason. It takes some of the best things offered by the HP Pavilion 21 (our **Best Performer**) and takes it to a whole new level, also incorporating features its cheaper sibling skips. The HP Pavilion Touchsmart 23 has a gorgeous 23-inch, Full HD IPS LED display that makes movie watching a very good experience – given the device's decent onboard speakers. Five-finger, multitouch gestures helps you make the most of Windows 8. In terms of features, it packs in everything except an HDMI port and TV mode, but it more than



Naked Surface

After the arguable success of its precursor, we're sure you want to see what's beneath the surface of Microsoft's Surface 2 Pro. <http://dgit.in/LgEOQvm>

Brand.a.gram

Can brands using Instagram as a propagandic tool? You'll be surprised. Read into it: <http://dgit.in/brandag>

Desktop All-in-ones Test

compensates for it with exquisite build quality, design and overall performance. A 720p webcam allows for better video chats and the 3-year warranty just safeguards your investment substantially. Like the HP Pavilion 21, this is one of the few machines out there on which you can indulge in a bit of casual gaming (with modern games at medium settings) without being disappointed. Overall, it's a very good AIO at the price.

The HP ENVY 23-d200in Touchsmart and Lenovo's IdeaCentre B540 are very similar products in terms of features and performance. Both look well-built and designed, with the HP offering the better glamour quotient thanks to its svelte figure. While the Lenovo B540 comes with an out-of-the-box TV functionality (complete with a media centre remote) and an NVIDIA graphics chipset that supports stereoscopic 3D visuals, the HP ENVY 23 AIO comes with Beats Audio and a 10-finger multitouch input LED IPS display. Wait, the Lenovo B540 offers a

multitouch enabled display screen, too. Actually, if you scan through the mag table, you'd be hard pressed to find any major differences between the two products. The Beats Audio functionality is definitely a feather in the HP ENVY 23's cap, whereas the all-encompassing, all-inclusive features of the B540 – not to mention the two 3D glasses that are bundled with it, and acceptable 3D performance – take it high on the lists of 3D enthusiasts who don't want to invest in an expensive 3D TV.

In fact, the Lenovo IdeaCentre B540 pips the HP ENVY 23 in terms of overall performance and also comes with a better set of proprietary software, not to mention its unrivalled two-in-one appeal. To top it off, it even sells for a lower price. For all these reasons, awarding the Lenovo Ideacentre B540 the **Editor's Pick** award was the easiest decision we ever made.

The HP Rove 20 is a mobile AIO – that's right, it comes with a built-in battery. It's a well-built device and isn't unlike a very large Windows 8 tablet that has good overall specs, decent performance and gives you the best of both worlds – a fully functional Windows desktop PC (with wireless keyboard and mouse) and a very efficient (albeit large) Windows 8

LENOVO IDEACENTRE HORIZON



There's a reason why we're keeping this machine separate from the main narrative and that's because it's not aimed at the masses, something we've never seen before. While it comes with a wireless keyboard and mouse, this is a 27-inch table-top AIO PC with a kickback stand. However, since it's also a massive tablet, supporting 10-finger multitouch input, Lenovo also sells a stand with wheels (for an additional ₹15k) that lets you use the Horizon as a touch-enabled table that you can take around the room. It's

powered by an Intel Haswell chip and NVIDIA graphics, very good hardware building blocks, not to mention a battery that could actually power this beast for two hours in our battery test. You can take it around on the bed or sofa, play games on it, or just keep it as a massive photo frame in the living room – and watch visitors' jaw drop in admiration. Eventually, machines like the Horizon will become more affordable and if this is the future of all modern AIOs then it looks like a bright one indeed.



tablet. Its built-in battery lasts just under 2 hours (in our high performance battery test), and it'll only last longer in a conservative battery mode – which isn't bad given its large screen. Powered by Beats Audio and an IPS display, watching movies and listening to audio is a pleasant experience. This is definitely worth considering if you have the appetite for it.

This leaves us with the Lenovo IdeaCentre A730, an uber cool, premium, Apple iMac-esque AIO with quite stunning build and design. Despite sporting a unibody-esque aluminium case, with the "slimmest" 27-inch multi-touch enabled screen (whatever that means), the A730 has

full 90-degree tilt capability, allowing it to be used as a regular desktop or touch-enabled flat table-top PC. It has an enviable feature set, including the only Blu-ray reader we saw in the comparison and a quad-core Haswell chip complemented by the latest NVIDIA graphics. On paper, this is the best specced AIO in the comparison, but our review sample only ran at 60-65% of its performance capacity due to an NVIDIA driver glitch that we just couldn't iron out; but keeping that unfortunate bit aside, it's a machine that you absolutely must consider if you're in the market for an Apple iMac lookalike with top-of-the-line hardware, great feature set and just a unique user experience. **d**

Bazaar

THE LATEST PRODUCTS
REVIEWED FOR YOU

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests and is finally given a score. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score



Extremely poor product.
Keep away!



Strictly OK.
Not recommended



Decent product.
Go for it, but there may be better products out there.



Very good product.
Highly recommended.



Ground-breaking product.
We've never seen anything like it before.
A definite must buy!

WANT TO EXPERIENCE AUGMENTED REALITY?

If you have an iOS or Android device, you can make some of the reviews in this Bazaar section come alive.

Step 1: Install "Zoop" (from the Google Play Store or Apple App Store)

Step 2: Look for images that have the **Zoop** tag and scan them using the Zoop app (**example below**).



Step 3: Enjoy an augmented reality Digit like never before

Remember to send feedback about this initiative to editor@thinkdigit.com

PLUS

- 94 | ASUS RP-N53 Range Extender
- 95 | Logitech Ultimate Ears 900
- 95 | Ricoh GR
- 96 | Cooler Master 690 III
- 97 | LG G2
- 98 | BlackBerry 9720
- 98 | Kaspersky Internet Security 2014
- 99 | Sony Xperia Z1
- 99 | Zebtronics Gladiator
- 100 | SanDisk Extreme II 240GB
- 100 | WD Black 4TB WD4001FAEX

& MORE...



Fitness Watch

Adidas hops onto the fitness watch bandwagon. After seeing Nike's Fuelband SE... Say hello to the MiCoach Smart Run. <http://dgit.in/16PH8sf>



M.O.J.O. Baby

Mad Catz is getting ready to launch its new Android gaming microconsole in December. Groovy, baby! <http://dgit.in/16hrGS1>

Bazaar

HP Slate 21

Android on this "PC" feels quite good. Nay, very good.

While the design and the form factor is pretty much the standard AIO stuff, there are little elements here and there that make you sit up and take notice of the HP Slate 21. Plastic throughout, but it doesn't look or feel cheap. Very well put together as well, and that makes all the difference. Not a glossy finish by any means, but there is the slight enamel look that lends it that little bit of shine. The same colour theme extends throughout.

The kickstand is rather well built, with the solidity and tautness of the hinge ensuring that the fairly heavy machine remains at exactly the angle you leave it at. The stand allows the screen to tilt back a fair amount as well.

The 21.5-inch screen has an IPS panel, with a Full HD resolution, with multi-touch support complete with gestures. The panel itself is natively bright, with good contrast levels that make this machine excellent for watching movies on. Text readability is brilliant, with very crisp written word on the screen, be it a document or a web browser. The Full HD resolution on a 21.5-inch screen size means there is a lot of real estate for you to work with. The web pages can be resized to nicely fill the width of the display, enhancing readability. Touchscreen works smoothly, adding another way to interact with the product. Also for a display this big, it understands gestures well.

While it may be Android on a touchscreen, using it with a keyboard (and mouse) is made simple by HP – especially the keyboard, which's customized to work with Android, fitted with Home, Back, and other buttons. The travel is good, key size is perfect and the spacing is adequate, but this is where a problem creeps in. The keyboard is noisy, creating a rucuss while typing. Since this is a USB keyboard, you can certainly swap it with a quieter one, if you don't want to upset the house cat.

The Tegra 4 powering this machine is faster than most tablets and smartphones, but not quite in the league of Intel's Core chipset. Benchmark scores were blistering fast, which also included the 3D Mark - Ice Storm graphics benchmark actually giving up, "this benchmark is too light for your machine". From an Android perspective, all the system benchmarks gave out the best scores we have registered. Benchmarks aside, the real world performance is what matters, and the Slate 21 is

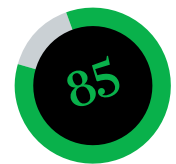


a delight. While going about the daily tasks on the Slate 21, you will hardly feel any slowdown. To see how well it holds up across, we tested the machine with various usage scenarios. First, we had a spreadsheet open, half a dozen tabs in the browser, Google Docs in the dedicated app and still, apps opened without any stutter. Second, we let all these apps remain open in the background, and opened a Full HD movie rip via VLC media player, and skipping through the timeline was smooth as knifing through butter.

One thing is certain, if and when HP does bless the Slate 21 with the Android 4.3 update (currently cycling through various Android 4.2 versions), the performance will only improve because of the wider TRIM support that'll enable better storage performance.

While we are no doubt impressed with this product, don't look at it as a full-fledged Windows desktop replacement. Yes, Android as a full-fledged desktop OS is quite restrictive at times, but it copes very well on a larger form factor, and the product's looks, build and performance are definitely heartening. The only niggle we find with this machine is that there is just 8GB of internal storage – but a memory card or a USB drive can compensate for that with ease. It's a great option to consider for a non-Windows, basic, space-saving touchscreen AIO. Buy this if you need an affordable yet innovative desktop based on Android.

Visbal Matbur



Features.....	80
Performance.....	85
Build.....	90
Value.....	85

Specifications

Processor: NVIDIA Tegra Quad-Core T40S; **RAM:** 1GB; **Graphics:** ULP GeForce; **Display:** 21.5-inch IPS (1920 x 1080 pixel) with touchscreen; **Storage:** 8GB + expandable memory; **Connectivity:** 1 USB for external drive, 2 USB for keyboard + mouse, micro SD, 3.5mm jack; **OS:** Android 4.3 (Jelly Bean)

Contact

HP India
Phone: 1243886238
Website: hp.com/in



For Relaxing Gamers

Gaming isn't just for the hardcore fraggers and headstrong action-oriented Gamers, anymore. Check these out: <http://dgit.in/GS2evU>



Not a "Guitar" Guitar!

Gittler's guitar is a baseless titanium beauty. Shiny, sleek and completely size zero! <http://dgit.in/1cwmpKS>

ASUS RP-N53 Range Extender

When the default range just doesn't cut it.

Range extenders aren't a common purchase since most people are tricked into buying bigger and more powerful routers which have high-gain antennae. However, they are the economical choice given that most high powered routers tend to cost a lot more.

Visually, this product has deviated from ASUS' usual colour scheme of black body coupled with blue LEDs. Instead it has a white body with a mild white light at the back and blue LED indicators on the front. The pattern on the front is the same as seen in most ASUS products, the very peculiar award winning design which it has carried forth since 2010 on almost every router and USB adapter. The lights on the front and the back can be custom-



Price ₹6,649 (Tentative)

used to turn on/off with a simple tap on the front.

Like most extenders even this one can be used as an Extender or as an Access point. The WPS button can be used to connect the extender to a router that supports WPS, unfortunately, the same does not apply to devices which want to connect to the extender via WPS. And talking about the range, it did a pretty good job given that we could still connect to the extender from roughly 70 feet away and run a complete run on Speedtest.net. Also, if your router is transmitting on a single band then the extender can extend the same on both 2.4GHz and 5GHz bands.

A feature that was new to this particular model was the 3.5mm jack that it had which can be hooked up to your speakers and you can stream music using the AiPlayer app which is available for both Android and iOS. Or you could simply select one of the internet radio streams featured on the device.

Mithun Mobandas



Features	78
Performance.....	83
Build Quality	81
Value for Money	65

Specifications

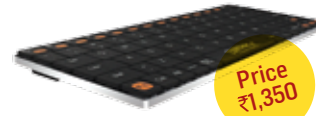
802.11 a/b/g/n; 2.4GHz/5GHz; 4.5 x 3.1 x 8.5 cm; 300 Mbps Uplink; 300 Mbps Downlink; Ethernet port; 3.5mm Audio port

Contact

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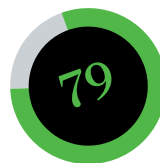
Zebronics Tabmate

Small wonder



Price ₹1,350

The Tabmate Bluetooth keyboard from Zebronics caters to the portability and productivity demands of the tablet generation. It's extremely slim, and probably the slimmest keyboard we've reviewed. The Tabmate has a stainless steel brushed back with an in-built, rechargeable Lithium-Ion battery. The battery takes about five hours to charge and the keyboard uses a standard Micro USB cable for charging included within the pack. The keyboard comes with different function keys that work with both iOS and Android, and they double up as multimedia combos as well. With a decent wireless range and good tactile keys, the Tabmate is a nice option to consider for a feature-rich, portable keyboard.



Features	79
Build Quality	81
Value for money.....	77

Specifications

Key Type: Membrane keys;
Compatibility: PC, Mac, Android, iOS; Bluetooth Version: 3.0;
Dimensions: 206.5 x 81.7 x 12.1 mm;
Weight: 220 grams; Warranty: 1 year

Contact

Top Notch Infotronix India pvt Ltd(Zebronics)
Phone: 044-40000007
Email: enquiry@zebronic.info
Website: www.zebronic.com

Rapoo 3920p

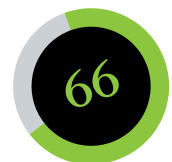
Expensive wireless mouse



Price ₹3,349

For those who don't like to use the laptop touchpad, here's a worthy wireless mouse to consider. The 3920p from Rapoo is like any other wireless mouse but it has a nice glossy finish on its curvy body. The 3920p has a rubber coating along both its sides for added grip. Its laser sensor works well and the overall mouse tracking is good.

We also liked the addition of a DPI switch on the mouse that allows you to switch between 880 and 1650 DPI on-the-fly. Other features include a scroll wheel with tilt support and side buttons for back and forward operations. At ₹3,349 the 3920p is expensive, considering you may get something similar at a cheaper price. Worth considering if you get it for a less though.



Features	75
Build Quality	73
Value for money.....	50

Specifications

Requirements: Windows XP/Vista/Win7/Win8, USB port; Connectivity: 5GHz wireless; Battery type: 2 x AA batteries (included); Warranty: 2 yrs

Contact

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Email: sunil.srivastava@rapoo.com
Website: www.rapoo.com



4K or No-K?

Does GoPro Hero 3+ overcome the flaws of its successor? Or does it fall short of the great GoPro name? <http://dgit.in/199MduV>

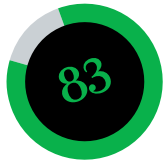
Zombies don't scare us

Cracked discusses why we need to stop pretending that Zombies are scary and how the Zombie Apocalypse is highly unlikely. <http://dgit.in/150UJz0>

Bazaar

Logitech UE900

Premium in-ear noise isolation that will appeal to the fanatics



Features	90
Performance.....	90
Build	85
Value	65

Specifications

Earphone Type: In-ear;
Driver: Proprietary
Armatures x 4; **Frequency:**
20Hz - 20KHz; **Connectivity:**
3.5mm; **Cable length:** 1.2m

Contact

Logitech India
Phone: 1800 600 1133

There are times when it becomes difficult to justify or recommend expensive earphones, especially in the performance and the value for money aspect. However, the Logitech Ultimate Ears 900 doesn't suffer from this problem one bit. One of the many Ultimate Ears products that the company has launched recently, the UE900 falls in the in-ear monitors category, meant for the audiophile. But even then, the fact that these pack in four balanced armature drivers, just goes on to justify the price tag. These are meant to sit snugly in the ear canal, with the cable twisting over and behind the ear. The package includes one blue cable, with the in-line call handling controls for the iPhone, and also a replacement black coloured one, but without the controls. The package also includes eight different size ear cushions - five silicone and



three foam. While they're very comfortable, the foam cushions tend to tear apart easily, if you aren't installing them carefully.

If you are willing to put down so much cash for these earphones, you'll be delighted by the performance. Not a surprise then that the quad-driver earphones have a rather wide soundstage and the sound is quite well balanced. The use of dual-woofers don't make the UE900's uncomfortably bass heavy, unlike certain Sony XBA earphones. Vocals are very nicely handled for most songs, except for "Live" recordings. All in all, you will pay a lot of money for the UE900. And once you do, this will be another feather in your richness cap. Because the sound you get from this will spoil you. And anything lesser will be unacceptable.

Vishal Matbur

Ricoh GR

A point and shoot from a different league

An enthusiast point and shoot camera, the Ricoh GR has a 16 megapixel APS-C sensor and a 28mm f/2.8 bright lens. Other impressive features include a built-in two stop ND filter, a 10MP 35mm crop mode and a 1.2 million dot 3-inch screen.

Using the Ricoh GR is incredibly easy. If you're a professional photographer who's used to the various dials and buttons (that can have features mapped to them), then you will love the GR's extensive suite of controls built onto the back. Speaking of build, the Ricoh GR is made of solid magnesium alloy, the same stuff real professional DSLRs are made of, so don't think of this camera as a weakling. A really neat feature that it borrows from the high end

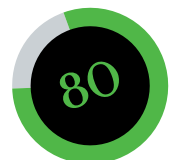
DSLRs is the mode dial lock, something seemingly very small, but with massive benefits.

We shot with the Ricoh GR quite a lot, including a popular music festival in Delhi and boy were we impressed! The Ricoh GR is extremely quick to respond, locking focus incredibly fast even in low light. The fast aperture combined with the large sensor produces not just great bokeh, but also helps keep the noise at bay when shooting at high ISO. Video quality's good, but the camera doesn't allow

you any exposure control while shooting nor an external mic port.

Video limitations notwithstanding, the camera's image quality's admirable. And its menu system would definitely appeal to the tinkering types.

Swapnil Matbur



Features	80
Performance.....	85
Design	85
Value	70

Specifications

Sensor: 16 Megapixels APS-C; **Lens:** 18mm f/2.8 GR Lens; **Video:** 1920x1080 at 30, 25, 24 fps

Contact

Ricoh India Limited
Phone: 011-49103000/100/200
Email: ril.info@ricoh.co.in



Touch laptops under ₹40k

We help you identify the best budget Windows 8 touchscreen laptops under Rs.40,000 and share some tips as well. <http://dgit.in/1a2iLpC>



Dungeon Keeper out

EA has released its new highly appealing game called Dungeon Keeper for download on Android devices

Cooler Master 690 III

A great case revisited

When you take a look back at the history of computer cases, you're sure to find the 690 series from Cooler Master involved in taking the design and features aspect of cases forward. The 690 III is the third version of the original and it has the same curved metal-mesh design with shiny accents along the sides. There is nothing much that has changed with the exterior design of the case but everything looks much more refined. The entire construction of the chassis feels strong and the quality of the parts used in making the case is top-notch. The top of the case features a slide to cover panel that reveals a small area to keep



Price
₹7,500

your belongings like flash drives and stuff. This area will be helpful for those who frequent LAN parties. The ports and buttons on the case can also be covered using this plastic panel. We've always liked computer cases that have stands which raise the height of the case from the ground to some extent and the 690 III takes care of that. These stands keep a good gap between the floor and the chassis so that your PSU fan has enough breathing space. Though the 690 III is only a mid-tower, opening it you'll notice that it still has a lot of space inside. The motherboard area has a big enough cut-out for the CPU bracket which would help system builders to easily install a new CPU cooler backplates without taking the whole motherboard out. Cooler Master has implemented a new design for the drive bays making each drive caddy a convertible that can be adjusted to accommodate either a 3.5" drive or a 2.5" drive. Apart from the

seven regular 2.5" drive bay areas, you can install three more in hidden areas such as behind the motherboard tray, below the optical drive bay and one at the bottom. Being a spacious mid-tower, the 690 III has a ton of water cooling support with space for installing a 240mm radiator at the top and the front. A 120mm radiator can be installed at the back as well. Cable management is taken care of with the inclusion of strategically placed cut-outs. Since the 690 III unit we received for the test was a pre-production sample, it didn't come with rubber grommets for the cable management cut-outs like the retail unit. Each cutout is big enough to route even the most thickest of cables. CM has provided a good amount of space at the back of the motherboard tray and the cables routed through the back never look cramped. The performance of the 690 III in terms of temperature was good. At an ambient room temperature of 28°C the internal case idle and load temperature was 41°C and 45°C respectively. With dust filters attached everywhere inside the case, the meshed design of the 690 III is not a lowdown in any sense. In fact, this meshed design allows for more airflow. At ₹7500, we feel that the 690 III is on the expensive side and Cooler Master could have thrown in a couple of more fans with the case to justify the price.

Siddhant Sharma

TP-LINK TL-WN823N Wireless N USB Adapter

Mini in size and speed



Price
₹1,099

This thing is miniscule and has a glossy texture, with a WPS button on its underside. It's not a wonder that they've managed to squeeze in a Wi-Fi device and a USB controller in such a small space since smartphones have been doing it for quite some time. While it may have 300Mbps capable circuitry on the inside it could only manage 54.81 and 46.86 Mbps on the uplink and downlink, respectively, at a distance of 20 feet from the router. Since not many people in India have access to a 6 Mbps line that could saturate this device, the TL-WN823N is more than capable of handling your average load.



Features40
Performance.....73
Build Quality.....83
Value for Money86

Specifications

39x18.32x7.87mm; WPS; 802.11 b/g/n; USB 2; Internal antennae; Warranty: 3 years

Contact

TP-LINK India Private Limited
Phone: 1800 209 4168
www.tp-link.in
sales.in@tp-link.com



Features86
Performance.....78
Build Quality75
Value for money.....60

Specifications

Dimension: 230(W) x 507(H) x 502(D) mm; Motherboard Support: ATX, mATX; Expansion Slots: 7+1; Form Factor: Mid-tower; Drive Bays: (x3) 5.25", (x7) 3.5"/2.5"; Cooling: Front 1x200mm, Rear 1x120mm; Front I/O: (x2) USB 3.0, (x2) USB 2.0, Audio jacks; Weight: 8.7 Kg; Warranty: 2 years

Contact

Cooler Master Co. Ltd.
Phone: 9820207871
Email: sanket_naik@coolermaster.com
Website: www.coolermaster.in



GTA V reaches 3mn sales

Grand Theft Auto V continues to break retail records, reaching 3 million UK sales - faster than any game before it



Arkham Origins Gameplay

As the release date grows closer, batfanatics grow more fanatic. Watch some of the gameplay at: <http://dgit.in/1b7lGOq>

Bazaar

LG G2

Finally, a phone from LG that impresses. A lot.

Straight out of its retail packaging, the G2's design tone makes it look very similar to the Samsung Galaxy S4. Not that it is a bad thing, but LG has made that even better with the literally non-existent bezel on the left and the right side of the screen. The footprint is relatively the same as the Galaxy S4, Despite a 5.2-inch screen, the G2 is not much bigger than the Nexus 4, and puts the likes of the Sony Xperia Z1 to shame. Additionally, taking a cue from Sony's new UI, LG has also moved the actions like Return, Home and Options into the on-screen UI itself, taking away the need for the touch sensitive keys below the screen.

Flip the G2 over, and you will find the volume rocker and the power key on the back panel, just below the camera. This looks different, but admittedly, takes some getting used to as well. Nothing that is insurmountable, but takes some getting used to. We received the white coloured version of the G2 for review. The back has a nice imprint on it, something like what a fiberglass material has. However, that doesn't mean much in terms of usability, because the plain finish tends to be slippery at times. The enamel colour finish looks good, at least in the white. It is a tad disappointing that LG has used all plastic on the G2, but it is of good quality nevertheless.

For some number crunching, the 5.2-inch screen on the G2 has a 424ppi, while the 5-inch screen on the Galaxy S4 has 441ppi. However, the difference isn't at all noticeable; in fact on the contrary, the G2's display looks crisper and colours look a lot more realistic. This fantastic display handles HD media playback very well. Like most phones, there are reflective tendencies as well, but IPS affords better viewing angles from the sides as well as outdoors. Among the recent crop of Android phones - the Galaxy S4, the HTC One, the Xperia Z1, this display is by far the best in all regards.

Packed with the Qualcomm Snapdragon 800 processor and Adreno 330 graphics, the G2 has more than enough power on tap, comparable



Price ₹41,500 (16GB)

directly with the Sony Xperia Z1, which has the same processor.

Beyond the benchmarks is the real world performance, which surely most of us are more bothered about. Like the other devices on Snapdragon 800 and 2GB of RAM, the G2's performance

is excellent. Apps open snappily, the interface is smooth and no amount of background app load slows it down.

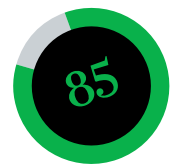
However, like the other phones running Snapdragon 800, the LG G2 also tends to heat up considerably when loaded. Play a game on this for 10 minutes, and the warm back panel is more than just uncomfortable.

For the 3000mAh battery packed in, the LG G2 is compensating for the scorching processor that it packs in. In terms of battery, we got almost two working days out of a single charge, when used as a primary phone. The brightness was set at 20% but the rest of the load - 3G constant, mails and SN syncing, IM chats and 2 hours a day of voice calls - drains most phones in a few hours. The Xperia Z1, with the bigger battery had impressed us, and the G2 continues on the same path.

While a 13MP camera is pretty much standard fare, what is not is the Optical Image Stabilization that LG has packed into this clicker. From what we saw with the test results, the camera is fairly decent in good light conditions, but it earns its keep and justifies the price tag when taking low light shots - where focusing does take a bit of time. Overall, this camera is fairly good for what it promises, with the revelation being its low light photography.

There is absolutely no doubt that LG has made an exceptional smartphone. And for once, an LG flagship is right up there with the rivals in terms of the overall package, and for some buyers, it may even be better. Its display is by far the best one on flagships at the moment. Battery life is very good, camera does the job well and the performance is breezy. LG loyalists will hop on, and so should people sick of rival flagships. Worth every Rupee.

Visbal Mathur



Features.....	90
Performance.....	90
Build.....	80
Value.....	80

Specifications

Processor: Qualcomm Snapdragon 800 quad core @ 2.2GHz; RAM: 2GB; Graphics: Adreno 330; Display: 5.2-inch IPS+ LCD (1920 x 1080 pixels); Storage: 16GB / 32GB; Battery: 3000mAh; OS: Android 4.2

Contact

LG India
Phone: 1800 180 9999
Email: <http://www.lg.com/in/support/productenquiry>



Keep Catchin' Em

14 years of the Pokémon gets Andrew Cunningham thinking about his glory days as a new teenage gamer. <http://dgit.in/1b7nLd8>



Black as an Angel

Long-lost short film rises from an unknown grave of film cans. Geeks, pay attention. <http://dgit.in/1b7oz1C>

BlackBerry 9720

Rocks OS 7.1, and a price that would appeal to the BlackBerry loyalist.

BlackBerry has been clarifying time and again that with BB10 around, the reports of OS 7's demise have been greatly exaggerated. With the new 9720, BlackBerry is back to appealing to the "BlackBerry Boys" crowd.

The phone's design cues have been taken from the previous generation of Curve phones, so much so that you will be hard pressed to actually identify any difference from afar. The only real difference is the straight-line keyboard with flatter keys, instead of the curves and angles of the previous gen. Below the screen sit the traditional bunch of keys – call connect/disconnect, the optical trackpad, Menu and Return. The battery cover has a nice soft finish to it, which



Price ₹15,990

immensely helps with the grip. The white colour finish has a nice design, which feels good in the hand.

It may just be a 2.8-inch real estate, but the IPS screen has brilliant colour reproduction, is bright and text readability is very good. The only niggle is that visibility in bright sunlight isn't as good.

The OS 7.1 UI is very well known, and that remains as is. The highlight still remains the mail client and BlackBerry Messenger. For the social networking animals, there is the new app called Multi-Cast, that will simultaneously post an update on BBM, Twitter and Facebook. It doesn't sport a powerful processor, but for the apps that OS 7 supports, it is pretty much in line with the requirements. Battery life is good enough for a day, when used as a primary phone.

Buy this, if all you want is an affordable BlackBerry phone.

Visbal Matbur



Features	50
Performance.....	60
Build	70
Value	70

Specifications

Processor: Tavor MGI single core 806MHz; **RAM:** 512MB; **Display:** 2.8-inch IPS touchscreen (480 x 360 pixels); **Storage:** microSD; **Battery:** 1450; **OS:** BlackBerry OS 7.1

Contact

BlackBerry India
Phone: N.A.
Support: https://consumersupport.webapps.blackberry.com/support/form/contact_in/

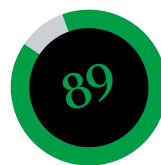
Kaspersky Internet Security 2014

Excellent features



Price ₹899

Pure anti-virus suites are something that many might not see the point in spending money on, especially when excellent suites like Avast! can be had for free. Kaspersky Internet Security goes one step further and offers an excellent scan engine that is complemented by a suite of very useful utilities. The parental controls in particular are very comprehensive. The bundled tools come with detailed instructions so even a novice can find his way around. This is an excellent suite and while Avast! does sneak ahead slightly in detection rates, it isn't by much.



Features	90
Usability	90
Internet Security	90
Value for Money	85

Specifications

Anti-Virus; Anti-Malware; Internet Protection; Identity Protection; Anti-Phishing; Parental Control; Maintenance tools; etc.

Contact

Kaspersky Lab
Website: <http://www.kaspersky.co.in/internet-security>
Support: <http://support.kaspersky.com/kis2014>

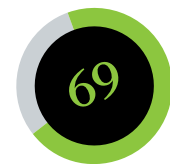
Ashampoo anti-virus

Decent, but expensive



Price ₹2,500

Ashampoo's foray into the creation of anti-virus (AV) software is an intriguing one. The AV engine used here is supposed to be a combination of the one used by BitDefender and Emsisoft, both excellent engines and AV software in their own right. Aesthetically speaking, the interface is quite pleasing and all the information you need is clearly visible. That said, the deeper menu structure is a little more convoluted, though to be fair, it's only comparatively so. The software is very light on features in some regards, but then again, it includes scanning support for ADS and LSP, which some users might appreciate. This would have been quite a decent suite if it wasn't for the price.



Features	80
Usability	75
Internet Security	70
Value for money.....	50

Specifications

Features: 2xscan engines; Anti-Virus; Web protection; game mode; ADS scanner; LSP viewer

Contact

Ashampoo
Website: <https://www.ashampoo.com>
Support: <https://www.ashampoo.com/en/usd/sup>



Lord of the Times

I now pronounce you Ring and Clock... You may now tell each other the time. Presenting the Ringclock! <http://dgit.in/17Eu7ym>



eBay's Spy Lens

Izvinite, madam. I seem to have misplaced my spy lens could you tell me where I can... ebay, is it? Spasibo! <http://dgit.in/16nBFup>

Bazaar

Sony Xperia Z1

The most powerful phone in India, on paper

The Xperia Z1 has a slab-like design, with a glass back. The water and dust resistance ratings mean the ports and slots get the similar looking flap covers, even its 3.5mm headphone jack is waterproof internally! It's still fairly slim, at just under 9mm, but the glass and the metal frame adds to the weight, tipping the scales at 170g.

The Z1 retains the slippery nature of its predecessors, thanks to the glass at the back.

The Xperia Z was one of the first phones to sport a Full HD display, and the Z1 builds on that. The Triluminos technology makes this display a very good one to watch movies on, because the colours are much more vibrant and the detailing is improved as well. Not surprisingly, text rendering has seen an improvement as well. The X-Reality



Price ₹44,990

engine boosts colour and sharpness, and while it does slightly increase the battery consumption, we find that it does make a huge difference while you may be browsing through the vacation pictures.

But for a natively bright display, the reflective glass above the screen does sort of complicate matters. The Xperia Z1 packs in a Qualcomm Snapdragon 800 processor and 2GB of RAM. The Xperia Z Ultra has the same specs, and is comfortably ahead of the likes of the HTC One and the Samsung Galaxy S4 in all system benchmark test scores.

This translates brilliantly into the real world as well, with apps opening instantaneously, and the background app load not bothering one bit. The Z1 never felt sluggish, something that even the HTC

One cannot completely claim. Tap on the Real Racing app on both phones at the same time, the Z Ultra wins the race by a couple of seconds. Even within the app, race loading times are lesser. All in all, a very good performer.

However, for a phone that packs in so much power, there is the inevitable heating issue. Use the camera to take around 10-12 shots, or the web browser for five minutes and the back heats up considerably, particularly just above the Sony logo and slightly to the left of it.

Battery life from the massive 3000mAh pack is quite good, lasting over a day as a primary phone with calls, mails, messages and IM - with 40% brightness. Its Stamina Mode lets you pick and choose apps that are important to run in the background.

The Z1's camera is a bit of a mixed bag. The UI has a manual mode, and surprisingly, for 16:9 aspect ratio images, you are limited to 8MP, and this is where the camera ends up capturing far less detail than the HTC One.

The successor to the Xperia Z is on paper the most powerful smartphone available in India. The Z1 has almost the same design tone, water and dust resistance capabilities, but improves on the display, battery life and to a certain extent, the camera as well. Costs a lot of money, and you have the equally brilliant LG G2 to consider as well.

Visbal Mathur

Zebronic Gladiator

Rome would be ashamed



Price ₹3,750

The Gladiator is a mid-tower case from Zebronic and has an appealing Alienware-esque design to it. The side panels protrude outwards and the left one has a large acrylic window. There isn't a lot of room inside the case. As there is only a single fan installed in the case and that to as exhaust, the Gladiator had a difficult time in keeping the internal case temperature at an acceptable level. With an idle temperature of 46°C and load temperature of 52°C at 28°C ambient room temperature, the Gladiator is one of the hottest and avoidable cases we've tested till date.



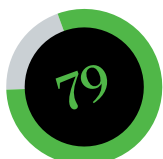
Features	63
Performance.....	45
Build Quality.....	57
Value for money.....	65

Specifications

Dimension: 405(L) x 175(W) x 390(H) mm; **Motherboard Support:** ATX, mATX; **Expansion Slots:** 7; **Drive Bays:** (x1) 5.25", (x2) 3.5"; **Front I/O:** (x1) USB 3.0, (x1) USB 2.0, Audio jacks, Card reader; **Weight:** 4.2 Kg

Contact

Top Notch Infotronic India Pvt Ltd (Zebronic)
Phone: 044-4000007
Email: enquiry@zebronic.info
Website: www.zebronic.com



Features	90
Performance.....	90
Build	75
Value	60

Specifications

Processor: Qualcomm Snapdragon 800 quad core @ 2.26GHz; **RAM:** 2GB; **Graphics:** Adreno 330; **Display:** 5-inch Triluminos display (1920 x 1080 pixels); **Storage:** 16GB + microSD; **Battery:** 3000mAh; **OS:** Android 4.2

Contact

Sony Mobile
Phone: 1-800-3000-2800
Email: <http://bit.ly/o7xidE>



Valve Opens Up

Valve announced the launch of a special Steam Controller. Read on to know more: <http://dgit.in/1837KSx>



Gasless Underwear?!

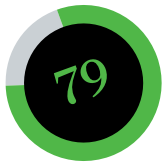
You read it right... Underwear that filter out flatulence. Read on for more. <http://dgit.in/17GbTMU>

Toshiba Q series 128GB

A decent 128GB SSD



Toshiba is one of the biggest manufacturers of NAND flash chips and this is their first SSD we've ever tested. Coming from the Q series line of SSDs this 2.5-inch drive is enclosed in a metal casing but has a thicker 9.5mm profile, slightly thicker for a laptop fit. Performance wise, the SSD achieved an AS SSD score of 671 and was ahead of the SanDisk Extreme II in a few synthetic benchmarks but closely followed it in real world tests with an 8GB sequential file transfer having read and write speeds of 376 MB/s and 311 MB/s respectively. People with a budget of ₹10,000 should consider this SSD. And we think you can get it for much cheaper in the market.



Features80
Performance.....86
Value for money.....70

Specifications

Model: THNSNH128GBST; **Max sustained read:** 552 MB/s; **Max sustained write:** 501 MB/s; **TRIM Support:** Yes; **SSD Controller:** NA; **NAND Process(nm):** 19; **Interface:** SATA III; **Profile:** 9.5mm; **Warranty:** 3 years

Contact

Toshiba India
Phone: 22 61771771
Email: polad.garda@toshiba-india.com
Website: www.toshiba-india.com

SanDisk Extreme II 240GB

One expensive but quick SSD



The Extreme II from SanDisk uses Marvell's new Monet 88SS9187 controller. We tested the 240GB version and the results were impressive with an AS SSD benchmark score of 758 which was just a bit below the Samsung 840 Pro Series SSD that we tested previously. The real world read and write transfer figures for an 8GB sequential file were in the range of 320 MB/s and 380 MB/s respectively. At an MRP of ₹26,100, it's very expensive, especially as the Samsung 840 Pro Series is available for much cheaper. In its absence or at a similar price, definitely worth considering.



Features82
Performance.....88
Value for money.....60

Specifications

Model: SDSSDXP-240G; **Max sustained read:** 550 MB/s; **Max sustained write:** 510 MB/s; **TRIM Support:** Yes; **SSD Controller:** Marvell - Monet 88SS9187; **NAND Process(nm):** 19; **Interface:** SATA III; **Profile:** 7mm

Contact

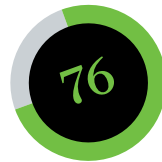
SanDisk Corporation
Phone: 18001022055
Website: www.sandisk.in
Warranty: 5 years

ASUS WiFi AC Adapter USB-AC53

Tiny might



The USB- AC53 is a moderately powerful USB Wi-Fi adapter that performed well on the 2.4 GHz band as well as on the 5 GHz band. Installation and connection was effortless thanks to ASUS's utility. The device supposedly has two PIFA which is the same as a PCB antenna but with a few design tweaks to improve signal characteristics.. Performance wise the adapter managed to maintain around 55 Mbps on the 2.4 GHz band while it managed about 120 Mbps on the 5 GHz band, both while it was situated about 20 feet away from the router. The NetClip is also a nice addition that you can use to clip this adapter onto any device.



Features60
Performance.....85
Build Quality84
Value for Money74

Specifications

Dimensions: 9.6 x 2.6 x 1.24 cm; **WPS:** USB 2; **Internal antennae:** Yes; **Warranty:** 2 years

Contact

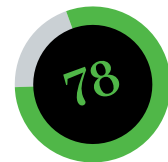
ASUS Technology Pvt. Ltd.
Phone: 18002090365
www.asus.in
reachus@asus.com

WD Black 4TB WD4001FAEX

Extremely fast, expensive



WD's Black series of drives have always been their top of the line performance drives. For a drive targeted towards consumers, the WD4001FAEX is quick. Our benchmark results pegged it at almost the top of the pack with Crystal Disk Mark Random read and write at 168.9 MB/s and 151.7 MB/s respectively. This drive was also great in real world transfer tests with its performance coming close to the Velociraptor. At ₹14,999, it would actually make sense to buy two 2TB drives instead of this but if you want its rip-roaring performance coupled with massive capacity, why not? Of course, you'll have to shell out a lot of money for it. Life's like that.



Features85
Performance.....85
Value65

Specifications

Unformatted Capacity: 3725.9 GB; **Interface:** SATA 3; **Cache memory:** 64MB; **Rotational Speed:** 7200 RPM; **Weight:** 450 grams; **Warranty:** 3 years

Contact

Western Digital
Phone: (011) 65151104
Website: www.wd.com



Interview with
Sunil Pai,
UI Architect, Myntra

NVIDIA announces Flame Works, Flex and GI Works technologies at Montreal



NVIDIA announced three new dev tools at the Editor's Day 2013 meet in Montreal Canada. The tools are a part of NVIDIA's GameWorks library which has about 300 visual effects engineers working on it currently, many of whom hold PhDs.

Making the announcement Tony Tamasi, Senior Vice President, Content & Technology emphasised the cross platform nature of many of these tools.

The most interesting demos were of the three new tools announced. Find them explained below in detail:

Flex: For the uninitiated, Flex is a unified GPU PhysX tool that helps integrate cross simulation interplay. What this means is that now you can have

fluids, cloth, rigid, and semi-rigid bodies interact with each other in real time all at once. The demo showcased simulations of water balloons and rigid bodies being flung about by water waves. This presents some very interesting possibilities for the future of game design and end user experience.

Flame Works: Remember games that had smoke wafting through other physical objects like ghosts? Say by to all that as Flame Works is a tool designed to render flame and smoke effects that interact with other physical objects in the scene. The idea is to have film-quality volumetric effects rendered in real time. Watch the demo here: <http://dgit.in/1exrcMY>

GI Works: A tool for creating accurate global illumination effects, it will help game designers save time and resources by not having to place multitudes of tiny light sources to sort of "fake" global illumination. The idea is to create realistic in game visuals by making sure lights bounce off surfaces creating indirect lighting. GI works can create real-time specular or glossy reflections and lighting in shadows is also possible.

We should start seeing games integrating all of the above technologies from early next year according to NVIDIA.

For more on this and other announcements from Montreal, catch the extended report at <http://dgit.in/1exrcMY> for more news on these technologies.>

*side panel



*Google offers cash

>>Not for free, of course. It's for devs who not just privately report bugs to the search engine giant's online services, but are also willing to do "proactive improvements that go beyond merely fixing a known security bug." Volunteering with benefits!

<http://dgit.in/1aYQtzZ>

*What languages to learn for Android development?

>>If you're just starting out as an app developer for the Android platform, take a look at some words of wisdom provided in the video link below

<http://dgit.in/1exrcMY>

```
Subroutine to retrieve a binary amount from a doc
Entry: #P1 contains the http parameter, #P2 contains the id parameter.
Exit: The binary number is returned.
int algorithm (int http, int id)
char website[100];
char #1;
int i;
return website[id];
```

*Kate for Linux simply rocks!

>>For all you Linux programmers out there, if you haven't checked out Kate, you're coding it all wrong. Seriously.

<http://dgit.in/1a4XXOI>



For latest news, updates and features, join us on Facebook at [facebook.com/devworx.in](https://www.facebook.com/devworx.in)

Bracing the walls

>> Making your web applications more secure > by Jait Dixit

According to a recent report by Cenzic, an application security intelligence platform, 99 per cent of production application it tested had at least one security vulnerability with a median of 13 vulnerabilities per app. With increased adaptation of web-based technologies by businesses, along with increased utilization of cloud and mobile infrastructure, these figures may become more bleak in times to come. You may think that your application will not be as significant as high profile clients like The New York Times, Bank of America, and the US Federal Reserve, but Aesop's teaching of finding safety in insignificance doesn't hold much weight here. The hackers are in fact interested in your website's visitors. They primarily seek to compromise and infect all the end-users accessing your website by subjecting them to a variety of attacks, and in this case – every website counts.

In this article we'll discuss some of the most common security vulnerabilities in web applications and what you can do to protect yourself. One thing to point out, is that the method of applying these solutions will change based on your platform, programming language and framework used. With so many permutations and combinations, we'll not be able to explain every solutions in detail – but most of the language and framework wikis have dedicated pages on security along with excellent help and support available on forums, IRC and Stack Overflow.

SSH Authentication and SFTP

The very first advice here is to stop using passwords for both these services. Instead use public-private keypairs to authenticate a particular user. When you want to authorize yourself or any other user then you only have to put that public key in the `authorized_keys` file in an account on the server and the server allows anyone knowing the private key that's coupled to that public key to log into the server. In case you or other user loses his/her private key then you only need to remove the offending



Up your website security now



Safe websites lead to building user trust. So plug those holes.

public key from the server and generate a new one from scratch and authorize that key.

Another suggestion would be to stop using simple FTP and rather use SFTP and/or rsync to store and retrieve files from the server. SFTP essentially encrypts your datastream providing you with security at transport layer. OpenSSH and thus both SSH and SFTP support AES-256, 3DES and Blowfish so barring some overnight breakthrough in quantum computer, attackers will not be able to decrypt your data stream till the sun turns into a red giant.

Up-to-date production environment

The modus operandi of a typical hacker involves finding which version of operating system, language runtime and/or framework you're using and then execute a specific set of exploits which will allow them to compromise the system. The most effective way of protecting yourself from such attacks is to keep every piece of software up-to-date, this will give you a twofold advantage of better performance, new features and added security.

Obviously, this shouldn't be done at the cost of jeopardizing the applications functionality or feature. If your application doesn't have any esoteric dependency(s) which require you to use legacy or older version of underlying software, then it makes all the sense in the world to use the very latest versions of such software.

Use SSL/HTTPS

Although not always feasible, it is always better for security that you deploy your website using HTTPS instead of HTTP. This will make sure that user credentials and other data is not travelling down the line in plain text for everyone to see. Shifting to SSL/HTTPS sitewide means that you should serve everything over HTTPS – HTML, CSS, images, Javascript, everything. If you plan on doing then then we'd also suggest that you go ahead and

enable HSTS (HTTP Strict Transport Security) and marking all cookies with the 'secure' flag.

Apart from authenticating your web server, SSL/HTTPS will also provide security against man-in-the-middle attacks. It will also provide bi-directional encryption which safeguards your communication against eavesdropping, tampering and forging. An SSL certificate costs around ₹4,400 per year for a single domain and is fairly easy to setup on any server. Make sure that you redirect all your traffic on HTTP to HTTPS along with the HSTS header mentioned above along with 'secure' cookies, you can do this inside your server/middleware configuration.

XSS Protection

XSS attacks allow a user to inject client side scripts into the browsers of other users. This is achieved by storing malicious Javascript code snippets in the database. If the same data is fetched and displayed to other users which will cause that particular snippet to be executed in the user's browser. XSS attacks are usually achieved by the virtue of a single bad practice, not sufficiently sanitizing user generated data before including it in a page.

Sanitizing all user generated data is the most effective way of protecting yourself against such attacks. If you're using a templating system (use one if you're not already) to generate your web pages, then most of them have excellent in-built mechanisms which sanitize such data making sure that you're 95% of the way there. The key is to understand the limitations of such mechanisms and work your way around them, you'll have to be very careful when working with output other than HTML where you'll have an entirely separate characters and words which require escaping.

SQL Injection

The go to attack for demonstration, by ethical hacking workshops. Essentially, the attack is a result of a user being able to execute arbitrary SQL code on a database which can lead to records being leaked or deleted. If you're using some sort of ORM layer in your application, then for all practical intents and purposes you are protected from SQL injection.

It may be the case that your application requirements force you not to use such an ORM and require you to directly run native or raw SQL queries, therein as the bard would say, lies the rub. If native or raw SQL is not properly escaped before running then



Protection is absolutely essential

*w3af

(web application attack and audit framework)

<http://w3af.org>

>>You can easily find some of the most common vulnerabilities in your website using this nifty little tool. Written in Python, this cross-platform tool with it's 130+ plugins it is able to identify most of the common web application vulnerabilities like SQL injections, OS commanding, remote file inclusions, cross-site scripting (XSS), unsafe file uploads and so on.



there are all chances that someone can wreak havoc within your system. You must use native queries absolutely sparingly if at all you must. The key to protecting yourself from such attacks is to always be careful to properly escape any parameters that the user can control.

CSRF Protection

CSRF or Cross Site Request Forgery is when unauthorized commands from a malicious user are executed using the credentials of another user without that user's knowledge or consent. One can say that this attack is a mirror of an XSS attack, in case of XSS – it exploits the trust a user has for a particular site, CSRF exploits the trust that a site has in a user's browser.

There are a number of countermeasures to protect yourself from CSRF attacks something that you can do right off the bat is that you can embed a user-specific token in all form submissions and side-effect URLs prevents CSRF; the attacker's site cannot put the right token in its submissions. You must limit the lifetime of session cookies and make sure that the client provides authentication data in the same HTTP Request used to perform any operation with some security implications. A more straightforward and effective solution is to use a CSRF filter like the OWASP's CSRFGuard (https://www.owasp.org/index.php/Category:OWASP_CSRFGuard_Project | <http://goo.gl/FiwlPE>). The filter is then responsible for handling CSRF tokens in the request and response HTML.

Clickjacking

A very devious form of attack in which the a user is tricked into clicking something different from what the user perceives they're clicking, which in turn leads to revealing confidential information to the attacker or at times allow the attackers to take control of their system. It is carried out by a malicious site wrapping another site in a frame.

Standard protection against clickjacking is for the server to define a Content Security Policy. CSP defines a standard HTTP header which allows websites to declare approved sources of content that browsers should be allowed to load on that page. This covers JavaScript, CSS, HTML, frames, fonts, images and embeddable objects. The standard CSP header Content-Security-Policy is supported by Firefox 23 and Chrome 25 onwards. Another solution is to use the X-Frame-Options, which will force a compliant browser to deny any framing or prevent framing by external sites or allow framing only by specified site depending on the options in the header. >



>>“I don’t hate Flash, I just didn’t warm up to it.”>>

>>Sunil Pai, UI Architect, Myntra

Tell us a bit about the CSS Library you created.

Beam (<https://github.com/threepointone/beam>) is the result of trying to do animations based on exponential smoothing algorithms. This funny little algorithm has its roots in 5th century BC greek philosophy (search for “zeno’s paradoxes”) and is widely used in the 3d world, games, and motion graphics. I was trying to mimic a couple of these animations I’d seen elsewhere on the web, but with regular html elements; this led to writing an animation engine, a css serializer, helpers for css transforms, and finally Beam itself, which pulls it all together. Have a look at the funny little demo at <http://threepointone.github.io/beam>. Beam’s useful for bringing physicsy animations to UI elements, which means your drag and drops looks better, and live dynamic animations become very achievable. I’ve used beam to implement inertial scrolling, accelerators, buttons, and even a graph smoothing algorithm.

Why JavaScript?

Hell, why not javascript? Javascript is the South Indian English dialect of the technology world; all colloquial, quirky, illogical, and the pronunciation is highly suspect. But it gets the job done, and then some! It’s also good at borrowing ideas from other languages, and a good fit for multiple environments. The front end of the internet runs on it, so ‘reloading’ becomes your compile button. That’s crazy good! I like having functions as regular objects, the dynamic/loose nature of the type system, being able

to mess with code during runtime, and the crazy, crazy community that’s coming up with a 100 new ideas a day. This shit does not get old, I promise you.

Why do you hate Adobe Flash so much?

Lies! I don’t hate Adobe Flash, I just didn’t warm up to it. Look, when we’re learning front end development, we spend endless hours reading other peoples source code - HTML, CSS and Javascript. right-click and view-source and/or inspect element becomes second nature. The colleges in India don’t really teach any of that, and the browser environment itself is super hostile and quirky. I hate that margin: 0 auto; is the accepted method to center an element with CSS. This is the 21st century, ffs. And who decided that “draggable” is a css property? But I digress. Anyway, so Adobe Flash. This technology breaks the learning flow by becoming a black box. It might be a gorgeous animation, a complex application... whatever. If you’re in my browser, and I can’t see what you’re made of, then I’m an angry man. So I’ve always made it a point in my career to be the guy who responds to “we can’t do that in javascript” with “lemme give it a go.” Worked out well for me as a career move, and my laptop fans thank me everyday.

Why do all shopping sites look the same?

Do they, really? I think it comes from the people who get the most ‘say’, or ‘final

cut’ when it comes to the site’s look and feel. So when Sunit Singh’s in charge at Cleartrip, it’s a given that the site will look and feel ‘designed’ and well thought out. And if it’s the IRCTC, then you know that you’ll want to pull out your own eyes after 20 minutes of whacking your keyboard. I like Flipkart’s redesign, and Amazon’s responsive layout is really neat. Myntra’s always had feedback from people saying they love the typography and the ‘style’ that runs through the site; all credit to the designers in the office for that. Without giving away any secrets, I can promise big stuff happening on Myntra in the UI space, so keep an eye on the site for details. Also, we’re hiring! I’m looking for the most mental folk to come join me at and create crazy beautiful web stuff.

Any advice for budding developers?

- Practice, practice, practice. The naivety of the engineering community is to believe that 4 years of ‘professional’ education are sufficient for a lifetime. The truth is you’re going to have to constantly keep studying. Which is fine, really, because programming is easily the most interesting domain in the history of the world. Where else does one get to work on the science of structured thought?

Sunil Pai works as a UI Architect at Myntra. He’s previously worked at Yahoo, Idiom, Visa, Pramati, and his uncle’s garage. Beyond work, he writes open source for fun, and plays a blue Les Paul. He tweets at @threepointone.>

*coding matters



Server’s up. What’s next?

>>Check out this fine series of detailed articles on ArsTechnica that shed light on and walk you through the process of setting your own custom web server. But as far as a developer’s concerned, what should one do after going through all that coding pain? Read on...

<http://dgit.in/Hgnvz4>



Code is essential

>>Just how important is coding in our increasingly tech-dependent life? Very important. That’s the message from Clive Beale of the Raspberry Pi Foundation. Here you’ll see him discuss the revolutionary tiny computer and UK’s attitude towards software development.

<http://dgit.in/Hgnvz4>

digit KILLER RIGS

Everything you'll ever need to build your own PC. Whatever your budget.

■ Basic rig = ₹26,270 ■ HTPC = ₹29,327 ■ Entry-level gaming = ₹40,004 ■ Mid-range Compact System = ₹61,877 ■ Mid-range gaming = ₹68,644 ■ Ultra high-end = ₹2,17,248

BASIC RIG

Processor	Intel Pentium G2020	3,950
Motherboard	Gigabyte GA-H61M-D2H	3,720
RAM	Corsair 2GB DDR3 1333MHz	1,600
HDD	Seagate Barracuda 500GB	3,350
Monitor	AOC E2043FSK	6,580
Graphics Card	None	0
Cabinet	Huntkey T-91	1,650
PSU	Corsair VS450	2,360
Speaker (2.1)	Logitech Z103	1,560
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Amkette Ash Black (Bundle)	550
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		26,270

HTPC

Processor	AMD A8-5600K	7,500
Motherboard	MSI FM2-A75MA-P33	4,500
RAM	Kingston HyperX Blu DDR3 4 GB	2,500
HDD	Western Digital WD20EZRX 2TB	6,300
Monitor	None (your TV)	0
Graphics Card	None (HD7560D onboard)	0
Cabinet	Cooler Master Elite 120 Advanced	2,977
PSU	Cooler Master Thunder 450W	2,600
Speaker	None	0
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Microsoft Desktop 2000 wireless combo	2,000
Keyboard	Bundled	0
Sound Card	None	0
Total		29,327

ENTRY-LEVEL GAMING

Processor	AMD A10-5800K	8,850
Motherboard	ASUS F2A85-M-LE	6,800
RAM	G-skill F3-10600CL9S-4GBNT	2,500
HDD	WD Caviar Green (WD10EZRX) 1TB	4,520
Monitor	AOC I2251FWE IPS	8,350
Graphics Card	None	0
Cabinet	Huntkey T-91	1,650
PSU	Corsair VS450	2,360
Speaker	F&D F680	3,500
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Amkette Ash Black (Bundle)	0
Keyboard	Amkette Ash Black (Bundle)	550
Sound Card	None	0
Total		40,004

MID-RANGE COMPACT SYSTEM

Processor	Intel Core i5-3570K	16,200
Motherboard	Asrock Z77E-ITX	11,000
RAM	Corsair Vengeance 8GB DDR3 1600	5,300
HDD	Seagate Barracuda 2 TB	6,200
Monitor	Your TV	0
Graphics Card	ASUS GTX 650 Ti Boost 2GB	13,850
Cabinet	Cooler Master Elite 120 Advanced	2,977
PSU	Cooler Master Thunder 500W	3,400
Speaker	None	0
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	Microsoft Desktop 2000 wireless combo	2,000
Keyboard	Bundled	0
Sound Card	NA	0
Total		61,877

MID-RANGE GAMING

Processor	Intel Core i5-3470	13,750
Motherboard	Gigabyte GA-B75M-D3H	4,850
RAM	Kingston HyperX 8GB (KHX1600C9D3B1K2/8GX)	4,935
HDD	Toshiba 1TB DT01ACA100	4,620
Monitor	BenQ G2420 HD	10,500
Graphics Card	ZOTAC GTX 650Ti Boost	13,700
Cabinet	Antec One - S3	3,540
PSU	Corsair GS 600	5,400
Speaker	F&D F680	3,500
Optical Drive	Samsung 22x SATA DVD Writer	950
Mouse	CM Storm Devastator (Bundle)	2,899
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Total		68,644

ULTRA HIGH-END GAMING

Processor	Intel Core i7-4770K	24,400
Motherboard	ASRock Z87 Extreme4	13,000
RAM	Corsair Vengeance 8GB (2x4GB) DDR3 1600	6,100
HDD	WD WD4001FAEX 4TB + Corsair Neutron 128GB	23,298
Monitor	BenQ XL2420T	26,000
Graphics Card	ZOTAC GeForce GTX 780	51,500
Cabinet	Cooler Master HAF - XM	10,000
PSU	Cooler Master Real Power Pro 850W	11,000
Speaker	Logitech Z906 5.1	23,000
Optical Drive	LG Blu-ray WH14NS40 RW	6,000
Mouse	Roccat Kone XTD	4,000
Keyboard	Corsair Vengeance K70	8,450
Sound Card	ASUS Xonar Phoebus	10,500
Total		2,17,248

Killer Rigs

PCs for every budget, be it an entry-level one, a HTPC or even a beast of a machine. They're all here

Price Watch

Diwali is here. Bonuses are here as well. So blow your budget on tablets of every size and category you can think of.

Intel or AMD

Which processor mobo combos to buy?

Deciding which to get can be quite the pain

Agent 001

agent001@thinkdigit.com

I've been putting off a few config requests for quite some time because ... um ... GTA V happened. Well it's time to get back on track so I've decided to do a roundup of sorts and list just the processor and motherboard combinations since that's what most dealers are bent on selling you anyways. And don't get me wrong, it's not a bad thing since it does reduce the chances of the customer messing up the generation of AMD and Intel. Every other processor is a i3, i5, i7, A4, A6, A8 or an A10 but little do they notice that the nomenclature has been retained across multiple generations and this has been the bane of our existence. The nomenclature makes sense only for those who spell out the entire model numbers and such but if you call them purely by their segment name (i.e. i5 or A6) then you're bound to get things wrong.

Like all configuration tables even this is subject to modifications depending on your needs. If you need a heck lot of PCI-e cards on an HTPC (for whatever strange



reason it may be) then you can swap out the board I've mentioned and opt for a board with as many PCI-e slots which you may need. What you need to do is ensure that whatever combination that you go for, you should check the motherboards "CPU supported list" to confirm if your processor would be compatible. Motherboards rarely affect performance unless you wish to overclock which is why I've assumed that most users in the mid-range and enthusiast segment would be interested in overclocking their processors. Hence, I've included stable motherboards whose VRM features plenty of power phases.

In a bid to future-proof this list I've included a few processors that are yet to be launched in India but have enjoyed favourable reviews overseas in their respective categories. Also, I don't judge

whether you are an AMD fanboy or an Intel loyalist so I've included both options. The AMD FX-9590 clocked at 4.7GHz with a boost clock of 5GHz should be priced in the same segment as the Core i7-3930K and going by benchmarks should suffice for games that load all available cores. Comparing the same to a 4960X is somewhat common on the internet but the 4960X is bound to be way ahead given that it costs roughly twice that of the 9590. Similarly, the Haswell i3-4340 should provide slightly better performance than the A10-5800K since early benchmarks have pegged it better at single-threaded and multi-threaded applications. On top of that it has a lower TDP and greater memory bandwidth so it's economical too! But wait, the 5800K has an unlocked multiplier that should help to redeem itself against the i3-4340.

A question that I often have to answer when I mention a certain processor is why not pay the extra ₹1000 and get the next SKU? Well, if you've got money to spare then go ahead by all means but if that same amount could be spent getting a more efficient power supply or cooling fans then that would be the smarter choice from an economic perspective. Given that most of these processors have a turbo mode that kicks in when the extra power is needed it really doesn't make any sense to go for the very next SKU. Also benchmarks show that in most cases two subsequent SKU differ in performance by a meagre amount.

So until next time, do keep sending in e-mails telling me how your configuration is better than mine. Toodles! 📧

Viable Processor-Motherboard Combos:

	Low	Mid	High	HTPC
CPU	AMD FX-6300	Intel Core i5-4670K	Intel Core i7-3930K	AMD A10-5800K APU
Price in ₹	7,632	17,120	37,999	8,905
Motherboard	ASUS M5A97-R2.0	Gigabyte Z87X-OC	ASRock X79 Extreme6	ASRock FM2A75-DGS
Price	7,295	19,635	19,750	NA
	Alternatives			
	Low	Mid	High	HTPC
CPU	Intel i3-3220	AMD FX-8350	AMD FX-9590	Intel i3-4340
Price in ₹	7,900	13,230	TBA	TBA
Motherboard	ASRock Z77M	ASUS Sabertooth 990FX-R2.0	ASUS Sabertooth 990FX-R2.0	Gigabyte Z87N-WiFi
Price	NA	18,389	18,389	NA



Aww that's sweet!

Youtube filmmaker Casey Neisat gets a consolation gift from his fans at Nokia. Read on to know why: <http://dgit.in/18Jv3Fb>



Congo

Samsung buys 7.4% stakes in a well-known Gorilla Glass-making firm. Business, as usual <http://dgit.in/1dhuqGk>

Agent 001

The right decision?

I'm a student in Chennai. On the commencement of the semester, I bought Micromax Doodle1. I had a budget of ₹10,000 and was confused between :

- A) Samsung Galaxy S Duos.
- B) Micromax Canvas 2.
- C) Micromax Canvas Doodle.

Because of the smaller screen and lesser specifications, I chucked Galaxy S Duos off the list and shortlisted the two Micromax phones. And finally, I chose Micromax Doodle cause it gave a quad core processor. The only real risk I thought I took was that I gave up on a better RAM.

Canvas2 gave me a 1GB RAM with a single core processing unit. CanvasDoodle gave me 512MB RAM and a quad core processor. Was this a good decision?

Also, could you in your next issue compare Micromax's flagship models with the other expensive phones with similar specifications?

Hrushikesh. V

A The Canvas Doodle is your best bet here. It has a large display and the specifications of the device are good enough to run all the apps. Yes, with 512MB of RAM, you may see some lag during multitasking but the overall performance of the Doodle is good. So yes, it was a good decision to pick up the Doodle.

In-ear headphones advice

Hello! I am in desperate need of a new earphone (in-ear only). I am not an audiophile but I am somewhat nit-picky about the audio quality. Currently I own a Philips SHE3570WT which I had to buy urgently when both my Sony MDR-EX35LP and Creative EP-630 died (unfortunately, they died long before I bought my Lumia so I have no idea how they would have sounded with my current phone). I would use it with my cell phone, Nokia Lumia 620. The Lumia has a strictly average sound quality. The bass is OK but the highs are just too harsh for my liking especially at the frequency range of 7KHz-12KHz. The same problem is with my Philips in-ear too! It has a spike in output for the same frequency

range, which destroys the listening experience, making the music even more harsh at higher volumes. So I need to keep the highs low from the equalizer. I experimented with Nokia in-ears that came with my previous phone (the ones you can get separately at ₹349). The Nokia in-ears have good bass but submerged vocals and highs. The Lumia didn't sound harsh with the Nokia in-ears, maybe due to the fact that it submerges the vocals and highs.

So, the conclusions are:

1. I need an in-ear headphone that WOULD NOT SOUND TOO HARSH when using with my phone.
2. I want good bass, tight bass for that thumping experience when I listen to Rap/Hip-hop and Rock songs. The Sony and the Creative had lesser bass than I would like (I used them with my previous phone 5800 Xpress Music)
3. Sweet highs would be great but I doubt whether I would get that quality when the output of the device itself is crappy.
4. A good soundstage is preferable
5. The in-ears SHOULD NOT HAVE any in-line mic/volume controls, just plain in-ears only for music.
6. Cable should be good enough as I always keep my headphones with me and travel in crowded buses and auto-rickshaws with them.
7. Though I don't listen to vocal music a lot but still, good vocals are sometimes needed when listening to soft Hindi songs.
8. Treble should not be overpowering. Already my phone has overpowering (and harsh) treble!

My budget this time is ₹3,000. Not many brands are available where I live. I see only Sony, Sennheiser and Skullcandy are available in Reliance Digital here. Philips and JBL Tempo can be seen sometimes. I have shortlisted Sony XB30EX and Sennheiser CX 300-II because many are saying that they have somewhat submerged vocals and highs and I think that may solve the problem of my phone having harsh higher frequencies. By reading mixed reviews online, I am really confused between the two. Please advice which of the two

would be better for use with my phone and also suggest other alternatives.

Siddhanta Biswas

A Great to see a mail from a discerning reader. You are very right about the source and it matters a lot when it comes to great audio reproduction. In our test labs the difference is very noticeable when we try playing the same test samples from our Xonar Essence One amp or the STX or the iPad and even a portable source like the HTC Radar smartphone. We usually recommend devices that have a neutral signature so that you can tweak individual preferences using a DSP Equalizer. Considering your case I'd say you stay away from SoundMagic in-ears or even something like the Meelectronics M6. For your particular situation the Creative HITZ MA 350 is a good choice and well within your budget. It does have volume controls and mic but they cause no hindrance. The cable is flat and tangle free. Another good choice – and one that is even cheaper – is the Cowon EM1. The Cowon is available in a microphone-free version as well. Both should be available via online shopping websites. As for the Sony XB30EX and Sennheiser CX 300-II we can't give you an opinion because we honestly haven't got them in for review yet. Hope to hear from you again.

For want of a GPU

I want to buy a graphics card, either 1GB or 2GB. Can you please suggest what to buy and where to buy it from? My system configuration:

Intel Core i3-2100 (3.1GHz), 4GB RAM. I want to play games like NFS Run, Mass Effect, etc.

Chidella Saijayachand

A We'll need more details before we can recommend a card.

- What PSU are you using?
- What motherboard are you using?
- What's your budget?

For a tight budget, the Nvidia GT640 should be fine (available for around ₹7,000). If you have a 450+W PSU, then the Nvidia 650Ti should be ideal. (available for ₹12,000 approx). Both cards are available on Flipkart.com and PrimeABGB.com. **A**



UnFlexed

Flex unveiled: The latest in LG's phone models. Take a look at The Verge's article for the same: <http://dgit.in/1gE5Sdd>



Web of fire

Say hello to the Fireweb: The first Firefox OS phone released by LG. Read the article to know more: <http://dgit.in/1cW4Y6D>

SPEND SMART

Considering how tablets seem to be catching on, we will take a look at tablets in the market today and compare their specifications.



TABLETS

Brand	Model	Display Size (in inches)	Display resolution	Processor	RAM	Built-in storage	3G (via SIM card)	Calling capabilities	OS	Price in ₹
ASUS	MeMO Pad	7	1024x600	1 GHz VIA WM8950	1GB	8GB	N	N	Android 4.1	5,990
Acer	Iconia B1	7	1024x600	Dual-Core 1.2GHz MTK 8317T	512MB	8GB	N	N	Android 4.1.2	6,940
Lava	E-Tab Xtron+	7	1024x600	Dual-core 1.5GHz	1GB	8GB	N	N	Android 4.2.2	6,999
Lenovo	IdeaTab A1000	7	1024x600	Dual-Core 1.2GHz MTK8317	1GB	4GB	N	Y	Android 4.1	8,399
Spice	Stellar Pad Mi-1010	10.1	1280x800	Dual-core 1.5GHz	1GB	16GB	N	N	Android 4.1	8,499
Micromax	Funbook Mini P410 Tablet	7	1024x600	Dual-core 1GHz	1GB	4GB	Y	Y	Android 4.1	8,820
Karbons	Cosmic Smart Tab 10	9.7	1024x768	Dual-core 1.5GHz	1GB	1.5GB	N	N	Android 4.1	8,959
iball	Slide i9018	9	1024x600	Dual-core 1GHz Cortex-A7	1GB	8GB	N	N	Android 4.2	8,999
Simtronics	Xpad Mini	7.85	1024x768	Quad-core 1GHz processor	1GB	8GB	N	N	Android 4.2.2	9,299
Videocon	VT10	10.1	1280x800	dual-core 1.5GHz	1GB	8GB	N	N	Android 4.1	10,640
Amazon	Kindle Fire HD 7	7	1280x800	Dual-core 1.2GHz TI OMAP 4460	1GB	16GB	N	N	Android 4.0 (customized)	11,999
Samsung	Galaxy Tab 3 210	7	1024x600	Dual-core 1.2Ghz	1GB	8GB	N	N	Android 4.1	12,810
HCL	Me G1	9.7	1024x768	Dual-core 1.2GHz ARM Cortex-A9	1GB	8GB	N	N	Android 4.0.4	12,990
iberry	Auxus CoreX23G	7	1280x800	Dual-core 1.6GHz ARM Cortex-A9	1GB	8GB	Y	Y	Android 4.1	13,000
iBall	Edu slide i1017	10.1	1280x800	Dual-core 1.5GHz ARM Cortex-A9	1GB	8GB	N	N	Android 4.1	13,999
ASUS	FonePad	7	1280x800	1.2GHz Intel Atom Z2420	1GB	8GB	Y	Y	Android 4.1	14,499
Micromax	Canvas Tab	8	1024x768	Quad-core 1.2GHz	1GB	16GB	Y	Y	Android 4.2.1	15,499
ASUS	Nexus 7	7	1280x800	Quad-core 1.2GHz NVIDIA Tegra 3	1GB	16GB	N	N	Android 4.3	15,999
Samsung	Galaxy Tab 3 T211	7	1024x600	Dual-core 1.2Ghz	1GB	8GB	Y	Y	Android 4.1	16,250
iberry	Auxus Core X4 3G	9.7	1024x768	1.6GHz Quad-core Samsung Exynos 4412 ARM	2GB	16GB	Y	Y	Android 4.2	16,990



Gearing up

For all those people not buying the Galaxy Gear only because of its incompatibility to your phone, read this and rejoice: <http://dgit.in/17f8had>



Nokia tablet

Windows joins the Tablet game with Nokia Lumia 2520. Read this article to see if you'd buy it over the next 'droid <http://dgit.in/1dhydDO>

Price Watch

ASUS	Nexus 7	7	1280x800	Quad-core 1.2GHz NVIDIA Tegra 3	1GB	32GB	Y	N	Android 4.3	18,999
Huawei	MediaPad 10 Link	10.1	1280x800	Quad-core 1.2GHz Hisilicon K3V2 Cortex-A9	1GB	16GB	Y	N	Android 4.1	20,490
ASUS	Nexus 7	7	1280x800	Quad-core 1.2GHz NVIDIA Tegra 3	1GB	32GB	Y	N	Android 4.3	21,000
Apple	iPad Mini	7.9	1024x768	Dual-core 1GHz Apple A5	512MB	16GB	N	N	iOS7	21,900
Amazon	Kindle Fire HD 8.9	8.9	1920x1200	Dual-core 1.5GHz TI OMAP 4470	1GB	16GB	N	N	Android 4.0(customized)	21,999
Apple	iPad 2	9.7	1024x768	Dual-core 1GHz Apple A5	512MB	16GB	N	N	iOS 7	23,029
Samsung	Galaxy Tab 3 311	8	1280x800	Dual-core 1.5GHz	1.5GB	16GB	Y	Y	Android 4.2.2	24,500
Apple	iPad Mini	7.9	1024x768	Dual-core 1GHz Apple A5	512MB	32GB	N	N	iOS7	27,900
Samsung	Galaxy Note 510	8	1280x800	Quad-core 1.6GHz Exynos 4412	2GB	16GB	Y	Y	Android 4.1.2	28,130
Apple	iPad 3rd Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A5X	1GB	16GB	N	N	iOS7	29,690
Apple	iPad Mini	7.9	1024x768	Dual-core 1GHz Apple A5	512MB	16GB	Y	N	iOS7	29,900
Apple	iPad 2	9.7	1024x768	Dual-core 1GHz Apple A5	512MB	16GB	Y	N	iOS 7	31,900
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	16GB	N	N	iOS7	31,900
Apple	iPad 3rd Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A5X	1GB	32GB	N	N	iOS7	32,500
Apple	iPad Mini	7.9	1024x768	Dual-core 1GHz Apple A5	512MB	64GB	N	N	iOS7	33,900
Samsung	Galaxy Note 800	10.1	1280x800	Quad-core 1.4GHz Exynos 4412	2GB	16GB	Y	Y	Android 4.1	35,490
Apple	iPad Mini	7.9	1024x768	Dual-core 1GHz Apple A5	512MB	32GB	Y	N	iOS7	35,900
Apple	iPad 3rd Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A5X	1GB	16GB	Y	N	iOS7	35,900
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	32GB	N	N	iOS7	37,900
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	16GB	Y	N	iOS7	39,900
Apple	iPad 3rd Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A5X	1GB	64GB	N	N	iOS7	40,900
Sony	Xperia Z tablet	10.1	1920x1200	Quad-core Qualcomm Snapdragon APQ8064 1.5GHz	2GB	16GB	Y	N	Android 4.2	41,499
Apple	iPad Mini	7.9	1024x768	Dual-core 1GHz Apple A5	512MB	64GB	Y	N	iOS7	41,900
Apple	iPad 3rd Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A5X	1GB	32GB	Y	N	iOS7	42,773
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	64GB	N	N	iOS7	43,900
ASUS	PadFone	10.1	1280x800	Dual-Core 1.5GHz Qualcomm Snapdragon S4 8260A	1GB	32GB	Y	Y	Android 4.1	44,690
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	32GB	Y	N	iOS7	45,900
Apple	iPad 3rd Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A5X	1GB	64GB	Y	N	iOS7	48,900
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	128GB	N	N	iOS7	49,900
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	64GB	Y	N	iOS7	51,900
Apple	iPad 4th Gen	9.7	2048x1536	Dual-core 1.4GHz Apple A6X	1GB	128GB	Y	N	iOS7	56,900

Industry connect

This month, take a note of the words of wisdom from eminent personalities in the tech industry.

**Cancer Control**

IBM's Microfluidic Probe seems like a step closer to curing cancer. Read this article to know more: <http://dgit.in/17atgc1>

SETTING UP YOUR OWN NAS

THE HARD WAY!

There are plenty of out-of-the-box NAS solutions available, but not all of them are economical for a home/small office use. Here's how you get around to building a full fledged NAS device and save a lot of money along the way.

Mithun Mohandas
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NAS (Network Attached Storage) devices are gaining in popularity by the day given the versatility that these devices have to offer. Not only do they offer a communal storage which is pretty much the basic function of these devices but they can be modified using the numerous plugins available to suit a lot of use case scenarios. You could always buy a NAS device with a similar level of versatility which should set you back by quite a bit. Or you could repurpose an old computer as a NAS device. We'll walk you through the entire process.

**Benefits**

While adding a new hard drive to your computer does take care of your space shortage issues it only lasts till someone else runs out of space. Another computer then needs to be upgraded. So instead of upgrading multiple devices one by one you could just build a NAS device and get a shared storage space which amounts to a much more efficient usage of space and funds. Not to mention that particular storage can be accessed anytime by anyone and is not dependent on any one user's machine. Sharing a folder on your computer does get the job done and others can store data on your machine.

However, when your machine is turned off or experiences connectivity issues then work might come to a standstill till your machine is fixed.

Adding additional storage space requires a fair bit of configuration too not to mention searching through all these files across multiple machines is quite inefficient. A NAS is safe from network issues affecting individual machines. All files are indexed by most file systems and thus searching for a certain file is faster and required no user action to manually index newer partitions/drives. Adding a new drive to a NAS device is also an effortless procedure as a lot of motherboards support hot-plugging on SATA ports. So you don't even have to turn off the NAS device to add extra storage, just plug in your power and SATA cables and the device's operating system does the rest.

You'd be surprised how economical it is to setup a NAS device, a lot of NAS operating systems are open source. Hardware requirements aren't outlandish, an old PC can be easily repurposed to be a NAS device. Newer network infrastructure isn't required unless your work is bandwidth exhaustive. And by virtue of being open source, any problems that you could face along the entire process has already been documented and steps to resolve them are available quite easily. And just like a good portable storage these things come with automatic backup facility to another

drive or to the cloud. Finally, depending upon which file system you've chosen you even have data redundancy so in the event one of your hard drives fails the device will send you an alert well before the actual event occurs and all you have to do is swap the faulty drive with a new one. The data copying and restoring is done automatically by the device.

Software needed

There are umpteen operating systems available for NAS devices. Most of them are based on a Linux kernel. We've chosen FreeBSD based FreeNAS for this little tutorial. There is also U-NAS, unRAID, OpenFiler, Greyhole, NexentaStor etc and for the more adventurous sort – any linux distro on the planet. FreeNAS is pretty much the most popular distro out there for NAS and here's why:

ZFS is a file system designed for enterprise storage solutions and is a bit heavy on resources but is something you just setup once and forget about it forever. It is faster than most file systems while ensuring data security all along.



FreeBSD-based FreeNAS



Metal vs Plastic

It's like trying to distract a dog from the bacon with yesterday's chicken. iPhone 5c just can't seem to compete. <http://dgit.in/1cwzELz>

War of the tablets

Read further to see the comparison between the new iPad Air, Nexus 7 and Surface 2 series: <http://dgit.in/1bdUn59>

How it does that is by having read and write caches like every other system but it continually indexes each file and creates checksums which are stored away from the actual file. So in cases of passive data corruption which occurs randomly even when the file is not being accessed, the file system can detect and heal the corrupt data. Also you don't need hardware RAID, infact it is recommended that you don't set it up at all since ZFS has it's own software RAID functionality called RAID-Z1 and RAID-Z2 which has overcome the drawbacks of RAID 5.

It also features deduplication and compression! Deduplication is where the system first creates a checksum for a new file to be written and then checks if the file has been written before. When there is a previous copy found the new one is not written and just an entry for the file location is made. Which is why you shouldn't backup the NAS data onto the same NAS device because the deduplication won't allow a new copy to be written. However, deduplication being the memory intensive operation that it requires a lot of memory (5GB RAM per TB of data!). So most people prefer to turn it off and then backup data onto the same NAS device till it can be moved elsewhere.

Hardware needed

The expenditure on the hardware comes down to what all features you wish to enable on your FreeNAS installation. Installing a 32-bit OS limits the capabilities severely since it can only address 4GB of RAM which means after keeping aside 1 GB for the OS there is 3GB of RAM left which can manage 3TB of storage space, in case you wish to use a 32-bit installation do stick to a UFS file system. Now we'll look at the 64-bit installation. ZFS can be used properly on a 64-bit installation and requires a minimum of 8GB of RAM. ZFS makes use of all the RAM you throw at it so the more it gets the better it can perform. If you wish to enable deduplication on ZFS then you need to get 5GB of RAM per TB of storage space which amounts to an awful lot once you go beyond 5TB. Also you might have to spend a little extra on a newer motherboard which can handle a lot more RAM. As for speed – 1600MHz is fine.

The processor should be rated at 1.6 GHz minimum for normal operation, the more features you enable the more processing power the device needs, going all the way to 3.2 GHz at peak loads is normal for deduplication. Intel or AMD doesn't matter since all the processor is doing is hashing files and nothing else.



The WD Red Drive

Hard drive manufacturers like Western Digital, Seagate, Toshiba have come up with hard drives specifically suited for NAS drives. The WD Red drive is one such device which is suited for a NAS implementation. It comes in multiple capacities ranging from 1TB to 4TB, the RPM is managed intelligently given it's IntelliPower technology which ramps up RPM when data is to be accessed and reduces RPM while idling. Also it features 3D Active Balance technology which leads to reduced wobbling. This not only saves power but also reduces the overall temperature and vibration inside the NAS device – both being harmful to hard drives in particular.

Better yet, these drives are tested and certified by all major third-party NAS manufacturers. So you can use them without any worry. They are better suited for 1-5 bay NAS implementations, in case you wish to add more drives than 5 you might want to consider enterprise solutions like WD Se and WD Re.

Set it up!

1. Download

Obtain whichever OS you want, we are using FreeNAS here. Get the ISO or the flash drive image. Use 7-zip to extract the

.xz file. Then use Win32DiskImager to use the uncompressed .img file and create a bootable USB flash drive.

2. Install all hardware

Get your computer configuration together, ensure that there is enough RAM as per your storage needs. Plug in the Ethernet cable and ensure all the WD Red hard drives are connected and are mounted securely.

3. Install FreeNAS

Boot up and change boot priority (usually by pressing F11) to boot from the flash drive. There will be a lot of random text flowing across the screen till you get to the ASCII art that spells out FreeNAS. Press 1 and then Enter to begin installation or FreeNAS will auto install, anyway.

4. Configure

Within a few minutes, FreeNAS will have installed and you'll be shown a console screen with an IP address mentioned at the bottom. Note this address down and try to access the NAS device from another computer's web browser. If you can access it then unplug your monitor and keyboard from the NAS device. You are done here.


5. Web interface

The default user id is "admin" and the password is "freenas". From this web management console you can get everything done. You can create partitions, create backups, schedule regular disk image creations or by means of various plugins add more features. Change the default id and password for security reasons.

6. Plugins

There are a lot of plugins available which should enable you to use your NAS as a media server or a web server. Install Plex to enable a media server GUI tool on the web interface or you could install Lamp and get a fully functional web server for your hosting needs.

Conclusion

That's all there is to it! It's not a big tutorial because there simply isn't enough steps involved, so get cracking and build your own NAS device for cheap! 



Backup OSX

Make your own pocket OSX backup pen drive
<http://dgit.in/OSXonastick>



Samsung Galaxy S4 I9506

Samsung Galaxy S4 I9506 with Snapdragon to launch in Europe. Read more about it: <http://dgit.in/s4I9506euro>

Canon's Price Philosophy

We spoke to Mr. Andrew Koh, Senior Director, Imaging Communication Product Group, Canon India about his responsibilities and his vision of Canon, India. He is from Singapore and is "married with three kids and one wife."

Swapnil Mathur

swapnil.mathur@thinkdigit.com

Q So the work you did in Singapore, and now being in India, do you feel there is a difference in how things work in terms of business and consumer behavior?

First and foremost, I've come from a very small country to a very huge country. In Singapore, the consumer is the same, but in India, consumer in the South is different from consumer in the North and they are different from the consumer in the East. The second thing that is very different is the level of familiarity with photography. I think Singapore is a very mature market for photographers, and this is based on the rate of adoption of newer technologies. India in my regards still has some way to go.

Q Since lenses are also a part of your division, we'd like to know how the prices of lenses are determined. Furthermore, what led to such a steep rise in their prices eight months ago?

Much as we try to standardize the prices worldwide, certain difficulties do come up, the first one being the exchange rate. When I first came to India in May, the Rupee was 55 against the dollar and now, it is 62. Since we cannot be changing prices all the time, we try to factor for this fluctuation. Second is the import duty, which is quite high on DSLR Lenses. The third is the VAT. Compare this to a country like Hong Kong, where there is no import duty or VAT, so lenses are cheap there. As far as the price hike is concerned, we are here for the long run and thus need to have a sustainable business. Therefore, we need to strike a balance between market share and sustainability. All these factors put together comes into play to determine the price of the lenses and even the price hike.



Andrew Koh, Senior Director, Imaging Communication Product Group, Canon India

Q What kind of signs should users look out for in terms of the price of equipment going up, so that they can decide whether to make the purchase now or wait?

Whenever people ask me when the best time to buy, my answer is always the same, "buy it now!" Why delay the gratification? The three or six months you spent waiting could have been spent enjoying the product instead! A product for us is not about the cheapest price, but the most value one can derive out of it.

Q Why does Canon India not offer an International Warranty?

Well, we at Canon try to provide our consumers with the best local experience. You buy it here and you will get the warranty here. There are cases like in Singapore where you can trade in our one year national warranty for a six month international one, but that's not so in India. As to why there is no international warranty, that is a Canon Inc. decision and I cannot comment on that. What we do have in India is the Canon Professional

Service (CPS) but we are currently in the process of revamping the requirements to standardize it across Asia. So you could travel across Asia and still reap the benefits of CPS.

Q Lately, the consumer has realized that big sensor makes a difference to image quality. What is Canon's take on that?

Well, we do have the large sensor GLx. However, different countries have different requirements. In the more developed countries, our S series is doing very well, and the G series is very popular. In India, not so much and I think that has to do with the level of sophistication and understanding of camera technologies, but I also believe that this is slowly changing. Earlier, people were only focused on one thing; "how many megapixels?" but after some time, they moved onto other things like sensor size and aperture. So overtime, I think that the understanding and sophistication will increase. I feel that as a market leader worldwide, we have a key role to play in educating the masses because we hold all the key technologies and we also manufacture all the parts and components ourselves.

Q What is your perception about the Indian market? Do you see the focus being primarily on point and shoot cameras or do you see a shifting trend?

The shift is definitely happening and it will develop a momentum overtime because a lot of people who have been focusing on compact cameras have suddenly realized that the demand for this category is declining, but the good thing is, that is driving up the demand for DSLR. This shift has already happened in many countries, but in India, it is just beginning.

Watch the interview at: <http://dgit.in/1h5faN1>



Google's Sword + Shield
 Google protects its own. It's 'uProxy' and 'Project Shield' aim at protecting individuals. Read on to know more: <http://dgit.in/1fTHtiv>



Idiotic Names
 Some characters in games really do have the most laughable names. Read on to see what we mean: <http://dgit.in/HdAVgi>

Graphically speaking

At AMD, Raja Koduri's the sole man driving the company's graphics hardware and software endeavours – a rare honour. Having worked at Apple (with Steve Jobs) before re-joining AMD as VP of Visual Computing, he's tasked with strategizing AMD's GPU architecture and hardware roadmap. We talk to him about Mantle and other gaming-related stuff. Excerpts below:

Jayesh Shinde
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Q Raja, could you tell us some more about how long Mantle has been cooking inside AMD and what was the thought process behind it?

The concepts about Mantle have been in discussion for more than five years, because that's how long some of the game developers have been coming to us and complaining about the problems on the PC and the ways to solve it. In terms of it really coming together enough for us to be able to announce it, we've been only working on it really for the past year. And the timing all came out to be good because now we're in a world where majority of the games are based on game engines, and all the game engines are now getting major overhaul and upgrades in anticipation of the new consoles. I'm sure this is a good time for them to architecturally adopt something new along with all the APIs they need to support for the game engines to be compatible on consoles, tablets, multiple APIs.

Q How specific is Mantle? Can a game developer code in multiple? It's not a runtime, so can you code partially in Mantle and partially in DX?

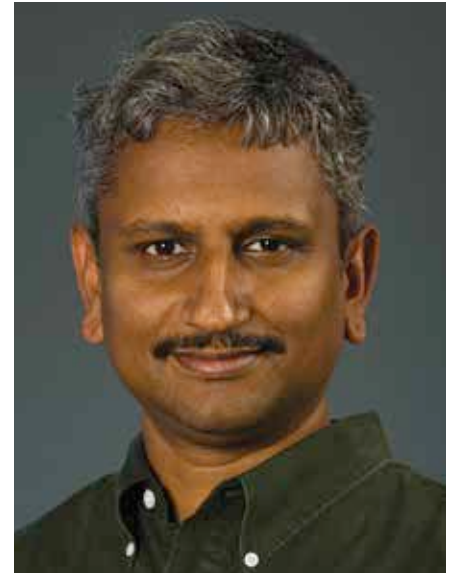
I think it (Mantle) has enough flexibility for those kind of interesting possibilities for the developers to do, and what makes sense and what doesn't make sense remains to be seen. The other thing I'd say is that Mantle, right now, is kind of in its first phase of experiment, there are specific game engine developers that are

working on it, playing around with it and are actually trying to do a full-fledged title like Battlefield 4. While doing all this, they will be learning. They will be like 'I needed this, I needed to be able to do this, I could have done more with this, if I had compatibility with something else or interoperability with some other APIs, etc. And all of those ideas will form the roadmap for how we move Mantle forward.

I mean there's one thing about getting excited about an API and another thing about putting all the hard work necessary to achieve maximum performance. Frankly, Mantle doesn't do any magic – as I said it's a very thin, driver-level API, which means it just gets out of the way. Its main job is not to be in the way, allowing the game engine and the game to take advantage of all our hardware capabilities.

Q Do you see a fundamental shift in AMD's priorities; as in, are they turning into a predominantly gaming company?

Yeah, I mean that's a big statement. I've never seen in my past life at ATI, the amount of focus we have on gaming and game developers like we have today ever before. And that's also one segment of the market – the whole high performance side of the PC market that's still very healthy. Despite all the doom and gloom that is written around the current PC industry, which is impacting (which I call) the 'crappy side of computers' which shouldn't have existed, actually, but they exist and they're going down because they are better devices. They're much better built, better screens. So those are killing



Raja Koduri, VP, Visual Computing, AMD

that side of the PC market. But the classic side of the PC market – the reason why we all use computers, that is still going pretty healthily, and that still needs more performance. That's where the statements that 'AMD is Gaming' is coming from.

Q Can we expect a handheld gaming device from AMD in the near future?

See the thing is, you've got to think, when you ask that question 'What problem will we be solving for our users?' Companies kind of get confused about that. They think they're solving their own problems. I mean, if you think that AMD needs to get a handheld game device just to put AMD technology in their hands, are we solving a problem that the user has with handheld gaming? That's how we look at things – if there is a problem that we think we can solve – and not just to sell more hardware. That's not how you get into these businesses. Right now, I don't see that there is a problem to be solved that isn't already covered (by Android devices for mobile gaming).

Koduri once served in a range of graphics leadership roles at AMD and formerly at ATI. He is the latest example of world-class processor engineering and design talent to join AMD. **Q**

Community

The zealous young lads of our very own Digit Squad put fingers to keyboard to present you with some interesting reads

Digit 101

Everything you ever wanted to know about keyboards in one, easy-to-understand article

Mother nature's day off

Nature has a habit of working in very weird, but usually wonderful ways. Sometimes however, she lets her hair down and when she does, she unwittingly unleashes the most horrific creatures that the world has ever seen.



Desmoxytes purpurea

Also known as the shocking pink dragon millipede, yes, that is its real name. This is a creature that can go around claiming that it's absolutely fabulous and not one other creature will argue that point. Why? This terrifying monstrosity secretes hydrogen cyanide! Unlike normal millipedes, this one doesn't even try to hide in the undergrowth.

Megalara garuda

With jaws so large that they need to be wrapped around its own head, this wasp is a freak of nature. At 2.5-inches, it's larger than any wasp has any right to be and it's quite poisonous as well. No one knows exactly why this creature has jaws that are longer than its legs but there is some speculation that it has something to do with mating rituals. (*shudder*)



Megalopyge opercularis

This diminutive creature might look like a cute fur ball and has even been christened the puss caterpillar because of its similarity to a Persian cat. Now why someone would imagine that a caterpillar can look like a cat is beyond us, but we'll let it slide. This awful creature secretes a potent poison from the spines along its fur.



Giant isopod

Just thinking about this gives us the creeps. A merciless, hideous beast with a bloodlust of the type we've never heard of before; the giant isopod basically latches onto the tongue of a fish, eats the tongue and then supplants it. The isopod then spends the rest of its life sucking the life-blood out of the fish from the surviving tongue stubble.

Vespa mandarinia japonica

That multi-syllable name is referring to the Japanese Giant Hornet, a hornet with a wingspan of just under 2.5-inches. What makes this creature scary is its damage potential, where it can massacre entire bee colonies when outnumbered a 1000:1. And anyway, getting chased for 50 miles by 2-inch bees is not an enjoyable prospect.



Blobfish

At long last, the end of our list and arguably, the ugliest animal in the world; presenting, the blobfish. Unlike all the other animals in this list, this one takes the cake for being the most harmless, but at the same time the most repulsive, creature here. A quirk of nature, this fish's ugliness is a consequence of its deep sea habitat.



Ubuntu Touch

Ubuntu's operating system for smartphones reviewed. Read more on: <http://dgit.in/touchmyubuntu>



Micro-Phone

Ever thought you need to check out the structure of an epithelial cell, but have nothing but your phone? Find out how to make your own Phone Microscope <http://dgit.in/micro-phone>

Unwind

How we unwind



ClickingBad

Many of you might have heard that Breaking Bad has, sadly, come to an end. It was Jayesh and our new minion that discovered clickingbad (<http://dgit.in/1h4Irra>). An addictive game that had the whole team hooked for quite a while, till Anirudh came up with an AHK script for making trillions overnight that is.

GTA V

GTA stole our time this month. A lot of it. Everyone was fighting over the console and while Jayesh was happily clueless in America, all work came to a standstill as we sat around and either played, or watched the story unfold as someone else played the game. Good times, really good times.



Initiation rites

We've been getting a steady stream of minions for a while now and figuring out what to do with them is a challenge. To sort out this problem we've been formulating a set of *initiation rites* that a fresh minion must get through if it's to be a part of our team. Hmm, do we shoot him before or after the internship?

digit DIARY

Since the time the Ant arrived in our office some 10 months ago, we've been working him over in the hopes of getting him up to scratch. Our efforts always pay off, but every once in a while he does something that leaves us speechless and wondering if our efforts were for naught. Take the first half of this past month for instance, the time when we received a copy of GTA V for review.

Jayesh had disappeared to the U.S. to meet some guys from AMD and he had left us his PS3 specifically so we could play the game. As it turns out, the Ant quickly and quietly swiped the device and snuck into his corner of the TC and started playing before anyone knew what had happened. We're an indulgent lot at Digit and we let the lad have his day, on condition that he finish playing and writing the review within the week, given that he had the DVDs to finish.

What followed was a mad week of non-stop gaming and sleepless nights and the result? A completed game in five days and a review a couple of days later. We were mighty impressed by his endurance and all the more surprised when he said that the DVDs would also be done on time (they were due in two days and he hadn't slept much the past week). What we didn't know was that all was not actually very well in the Ant's world. That fateful night, Jayesh and Anirudh went to sleep and left the Ant to his own devices, busy preparing the xml files and compiling lists and categorizing the DVD data.

It was early next day that they heard the moaning. Jayesh and Anirudh were shaken from the depths of their slumber by an other-worldly wail the likes of which they had never heard before. A hideously sad wailing that set their teeth on edge but simultaneously moved them to tears, a sound not unlike that of a banshee getting asphyxiated in an air-tight plastic bag.

As they shook the last dregs of sleep and their brain grudgingly started to kick itself into gear, they found the source of the noise. It was the Ant. He was frozen in his chair, staring at his monitor in complete, wide-eyed terror, and issuing forth that awful noise from his vocal chords. Jayesh and Anirudh were quite stunned at first, but as their brains booted up, they managed to get enough sense to try and coax the tale of horror from the mouth of that quivering young lad.

It turned out that the Ant had somehow, in his half-asleep state, deleted the entire contents of the Alpha DVD before he had compiled the ISO! Ten hours of hard work all down the drain because he accidentally pressed "Shift+Delete". To top it off, he had stored the data on an SSD and the fact that Windows 8 incorporates the TRIM function scared him even more (Google it if you don't know what we're talking about).

As luck would have it, the drive hadn't yet been TRIMmed and he could recover the data. But what a night! That wailing is something that will be etched in our memories forever. The Ant will never live this down. We won't let him. (muahahahaha)



R9-290X benchmarks

Check out the benchmark scores of AMD's latest poster boy GPU - Radeon R9-290X here: <http://dgit.in/R9-290X>



Battlefield 4 Comm

Interested in Battlefield 4? Remember to buy your matching headset! <http://dgit.in/16sDcKi>



This month we highlight some aspiring tech writers and their spirited attempt to get published in the magazine. Let's have more!

Readers' write-ups



Tarun Dham

Technology In Sports

Technology is an integral part of our lives. Most of the things we use currently wouldn't have existed without technology. Even sports isn't unaffected. Let's take a look at some technology specifically for sports:

CRICKET

People are crazy about cricket in India, but they hardly have a clue about the technology used in the sport. Obviously, the looking-glass that is your TV is also an important technological creation.

Snickometer

Created by Allan Plaskett, this technique helps umpires decide whether a batsman is out or not out. A sensitive microphone is kept near the stumps and it's connected to an oscilloscope that measures sound waves made by the ball touching the bat. On contact, the oscilloscope responds with a big wave (of sound). The decision is made when the wave is synchronised and played with the slow motion shot.

Hawkeye

This brilliant piece of technology was created by Dr. Paul Hawkins. It uses sensitive image processing techniques using cameras that are placed all over the stadium which track the trajectory of the ball thrown by the bowler. This helps accurately track the ball's speed and length, providing the decision that is used in LBW. The Hawkeye is not only used in cricket but also in tennis as well, to help resolve disagreements.

Dartfish

Dartfish is used by team coaches to analyse a player's performance, statistics etc.

It not only shows the player's live footage, but also compares the footage to the last-played match. This sophisticated system breaks the recorded footage into frame-by-frame sequences for the actions of each player, helping performance analyses.

FORMULA 1

Everyone is familiar with this sport which pits professional drivers against each other for a race using super fast F1 cars at break-neck speeds. Since the pace of this sport is extremely quick, it is continuously monitored by the race teams, and the racer is given second-by-second reports. There is a lot of impressive technology used :

Car Design

A regular F1 car is capable of going from 0 to 160km/h in less than five seconds and the design of the car matters a lot. To handle this, each and every F1 car is meticulously designed. The chassis of a typical F1 car is made of composite carbon fibre and lightweight materials and thus the weight of the car is very less but ballast is placed inside the car to improve weight distribution. This helps lower the car's centre of gravity, thus increasing its stability. The car is designed keeping aerodynamics in mind. Good aerodynamics minimise drag, lowering turbulence. The wings of an F1 car are very important too as they help in providing maximum downforce.

Steering wheel

Using the steering wheel of the F1 car, a driver has the ability to control many elements of the car. The buttons and knobs on the steering wheel can be used to change gears, adjust fuel/air mix, apply rev. limiter, change brake pressure, use the radio. A small LCD screen on the steering wheel displays data such as speed, engine

RPM, lap times, and the gear. The steering wheel has gear shift paddles as well.



Tanmay Patange

My visit to the YouTube API Developers Conclave

A big high five to Digit Squad members and readers alike who share the knowledge they obtain from this magazine. I would like to share one of my experiences with all you readers. Earlier this month, I attended the YouTube API Developers Conclave in Mumbai. The turnout was impressive and the attendees' response was great. All of them looked very passionate about YouTube APIs, especially for application development.

At the venue, I met Jonathan Levine, Associate Product Manager at Google. Here are some of the key points I discussed:

Me: I recently saw a movie called "The Internship", which was really fascinating. It shows the interns going through some tough challenges which they had never imagined. Is the process actually that difficult or is that just the Movie?

Jonathan: (Laughs) Not really! I agree that the process is not so easy to complete. However, whatever is shown in the movie is not 100% real, after all it's just a film right?

Me: Yes, exactly. Moreover, is it really the Google HQ shown in the movie?

Jonathan: Yes, at some parts. Some of the movie scenes were filmed inside Google headquarters, and I remember it happening just outside my cabin. It was really a great experience for all of us at Google.

Me: Google introduced the Chromebook Pixel and the Chrome OS. Is there any reason why Google employees are usually seen working on a MacBook Pro?

Jonathan: (Laughs again) Maybe yes! I have Chromebook Pixel, and in terms of hardware specifications, it simply stands



Youtube Radio

Youtube is soon going to be used on Android phones as a background music player. Read more on: <http://dgit.in/ytradio>



Corrigendum

The Digit Squad article on Rooting an Android Phone/tablet was written by Rupesh Prabhu in the Oct 2013 issue. We apologise for the error.

Digit Squad

out in the market. Nevertheless, I don't really use it. The reason I use MacBook Pro is because it is secure and lightweight.



Dileep Mohan

Hello Firefox!

The next big thing is already here: Firefox OS (FxOS). Mozilla's OS uses a Linux kernel and boots into a Gecko-based runtime engine, letting users run applications developed entirely using HTML, JavaScript, and other open web application APIs. Yes! Even the simplest website can be made into an app. Wait, the best part is yet to come. Since you are developing using HTML/JS, any other platform that supports a web browser will be able to use your app and have offline support too! So let's take baby steps to make a Hello World for FxOS.

Pre-requisites: HTML/JS/CSS basics; A text editor, Firefox browser, FxOS Simulator add-on and the Firebug add-on for debugging.

Let's Begin: In FxOS we design the UI with HTML/CSS and Javascript for programming controls like buttons, forms etc. We'll be making three basic files – an HTML (*.html*), Javascript (*.js*) and a CSS (*.css*). Create a directory to save your files, say "Hello" on your hard drive. And create a file *index.html* (any name will do) and save it with the basic HTML tags.

```
<head> <title>Hello Firefox</title>
<h1> Hello Firefox</h1>
```

You can test if the file is working by opening it in Firefox browser. You can also use CSS media queries to build a responsive layout for the application. Use `ctrl+shift+M` to check your app in different screen sizes in Firefox. Every Firefox OS app needs a file called *manifest.webapp*. This file contains the app's name, description, permissions and other settings like author, icon, etc. Type this in your text editor:

```
{
  "name": "Hello World",
  "description": "My first Firefox OS app",
  "launch_path": "/index.html",
  "icons": {
    "128": "/img/icon-128.png"
  },
  "developer": {
    "name": "Your name or organization",
    "url": "http://your-homepage-here.org"
  },
  "default_locale" : "en"
}
```

Save it as *manifest.webapp* in your directory. Now fire up the Firefox OS Simulator by going to **Tools>Web Developer>FirefoxOS Simulator** in the Firefox browser. Click on Add Directory and browse to the *manifest.webapp* you have just created. Tada! Your Hello World is now installed and running in Firefox OS. Now let's add a button and an input box in *index.html* inside the `<body></body>` tag:

```
<input type='text' id='testInput'
value=' something' />
```

```
<button id='testButton'>Click here</button>
<script src='helloworld.js'></script>
```

Now let's program the controls. As we know that the programming parts are done by Javascript, we now write the *helloworld.js*. In your text editor type these lines:

```
//get the added elements
var button = document.getElementById('testButton');
var txtInput = document.getElementById('testInput');
//click event
button.addEventListener('click', function(){
  var text = txtInput.value;
  //Show alert box with this text
  alert(text);})
```

Save it as *helloworld.js* in your directory. Open Firefox OS Simulator and click update. Congratulations! You have made your first FxOS app. Head to dgit.in/HFirefox for more resources.

Disclaimer: The views expressed in this section are of the respective Digit Squad members. Digit or 9.9 Media takes no responsibility of their claims whatsoever.



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Real world DND

Not unlike their online shopping counterparts, retail stores in the U.S are tracking their customer's every move. Here's how <http://dgit.in/1gCBZtE>

Keyboards 101

Buying something as simple as a keyboard for your PC can be quite a task with all those options out there. Let's help you cut that long list down, shall we?

USB or PS/2

Most motherboards come with a PS/2 port so it really doesn't matter if you get a PS/2 or USB keyboard unless you want the portability that comes with it. Keyboards don't need any significant bandwidth so use a USB 2.0 port.

Key Roll Over

KRO is the ability of a keyboard to distinguish all the keys that are simultaneously pressed.

- 3KRO - can detect 3 keys
- 6KRO - can detect 6 keys
- nKRO - can detect any number of keys

Ghosting

The keyboard circuitry is a mesh of multiple electrodes. Pressing a key triggers a combination in the mesh; pressing two triggers another. Certain combinations share the same signals so there is a chance that a key that wasn't pressed might be detected purely because of the similar combination in the mesh. This is called ghosting. Good motherboards have a modified mesh so that multiple combinations don't share the same signal.

Layouts

The way keys are positioned on the keyboard is according to a pattern that has been carried forth from the typewriters. Current technology has overcome the hindrances of the mechanical typewriter and thus we now have multiple keyboard layouts. Certain countries prefer a different positioning of some keys. Also, the language of the keyboard has a lot to do with the layout as well. The QWERTY layout is the most common, but there are other interesting layouts like the DVORAK - the most commonly used letters are placed in the centre row (ASDFGHJKL). This improves typing efficiency by reducing the number of mistakes made.

Unusual Keyboard Types Foldable

Made out of rubber or silicon, these keyboards can be rolled up and carried easily. Some aren't flexible but they can be dismantled.



Optical/Laser

These keyboards are quite exotic, they have a flat surface onto which the entire keyboard pattern is illuminated by light. Placing your finger over a key reflects light back into the keyboard and triggers a keypress.

Projection

Similar to optical keyboards with a twist, projection keyboards project the entire keyboard pattern onto any surface that reflects a sufficient bit of the projected light. Placing any reflective object over a key reflects light which is captured by a camera.

Features

Mechanical keys

These are durable keys whose trigger mechanism is altered to provide tactile feedback for those who prefer an audio chatter as they type.

Cherry MX Keyboards: Features

	Tactile feedback	Click noise	Actuation force
Cherry MX Black	No	No	60 cN
Cherry MX Red	No	No	45 cN
Cherry MX Brown	Yes	No	NA
Cherry MX Blue	Yes	Yes	50 cN
Cherry MX Clear	Yes	No	65 cN
Cherry MX Grey	NA	NA	80 cN
Cherry MX Green	Yes	Yes	80 cN
Cherry MX White	Yes	Slight	80 cN
Cherry MX Super Black	No	No	150 cN
Cherry MX Dark Grey	No	No	80 cN
Cherry MX Lock	NA	NA	NA

The Cherry MX series which is popularly used in most keyboards comes in multiple variants. Each variant suited for specific purpose.

Macros

Macro keys are programmable buttons which can trigger a set of commands or multiple key presses in a sequence. So if you want just one key to open an Explorer window, a browser window, a calculator and the notepad with just one key.

Backlighting

Backlighting is achieved when the entire key is made with an infusion of opaque and translucent plastic. The translucent part is then painted over with opaque paint to leave out just the key pattern. So when an LED is lit up beneath the keyboard only the character shows up illuminated. Certain keyboards allow for patterns in backlighting so you can have certain keys (WASD) light up keeping the others dark.

Cable modifications

Sometimes the keyboard cable is covered with a protective cloth sheath for added durability. Also keyboards feature routing paths along the bottom to channel the cable out of whichever side you want to. Now-a-days keyboards sometimes feature removable cables so you can replace the cable in case a mouse chews through it. Gold plating has no effect on performance other than the fact that it doesn't oxidize.

Nothing endures but change

I want to start with thanking all of you who wrote in to wish me by email or on Facebook – for those who don't already know I became a dad in September, and have been going through the whole deal of sleepless nights and tiring days that make the horrors of issue closing seem like a walk in the park. Since I've been asked a lot, I should tell you I named my son Lucas Isaac, as a tribute to two of my biggest science-fiction heroes – George Lucas and Isaac Asimov.

Now getting back to the headline of this column, the Greek philosopher Heraclitus was the first person to say this, and he said it 2500 years ago! He's right of course, and since 2500 years hasn't proven him wrong thus far, we're not about to try.

First I want to put some of the rumours I heard to rest: No I was not "fired", and neither did I "quit"! I don't work for either Apple or BlackBerry now – which is what some of you thought when I asked people to add me for a stress test of BBM that I ran on iOS! Funny? Yes. True? No.

I've always thought of Digit as the brand that breaks the mold, ducks under all the red tape and doesn't toe the line. We're different. Why? Because we have fun doing what we do, and we don't give a damn who we piss off so long as we tell the truth. I'd like to think I've kept that attitude going for the past decade (which I inherited from my seniors when I joined in 2003). Now it's time for some fresh blood to take over and bring something new to the table, whilst following the same ideals of course.

Many of you will ask, "Why has the RSS Feed shifted to the end of the magazine?" The simple answer is that although I am 100 per cent focussed on Digit the brand, over the past two or three months I have ceased to be 100 per cent focussed on Digit the magazine.

As many of you know, editors are creatures that hang on to their editorial pages as if their life depends on it (and often it does)... thankfully at Digit (and 9.9) we're a little different. Credit always goes where credit is due, and StaticSid (Siddharth's nickname

and thus the reason for "Static Page" in case you were wondering) has been the one to take charge in my absence. He will continue to be responsible for the day-to-day functioning of the magazine, and although I will surely meddle every chance I get (just to exasperate everyone), he's the one who deserves the praise (or abuse even), will ensure that the magazine reaches you on time, and that it carries content that you will love. Thus he is the new face of this magazine by default, simply because it's his rear end that's on the line and not mine anymore!

So what am I going to be up to now? Those of you registered on the forum would have seen me being more active there recently, so that's one aspect of what I will be doing. I will also do what I love most, interact directly with you, our readers, whether online, on Facebook, on our forum, over the phone and yes even in person.

My aim is to ensure that we find new ways to engage you, serve you and reach you. In order to be your technology navigator, we're going to have to do a lot more than give you a few articles in a magazine or on a web site – no matter how brilliantly written. Suffice to say, a bunch of us are going to be working on some interesting new things which we hope you will like. That's all I can tell you for now... without having to kill you that is.

We have a few things in mind already, obviously, but we still want to listen to you, and see if we've missed any aspect of what you expect from us. If you have ideas on how we can leverage our strengths and expertise to serve you better, make sure to drop me a line and let me know – via our Facebook page, the forum, and by email (robert@thinkdigit.com). Here's looking forward to change, and partnering all of you on the journey to improvement. 🍷



Robert Sovereign-Smith
Executive Editor
robert@thinkdigit.com

"In order to be your technology navigator, we're going to have to do a lot more than give you a few articles in a magazine or on a web site."

A handwritten signature in black ink, appearing to read 'Robert Sovereign-Smith', with a long horizontal line underneath.

Liked or hated this column?
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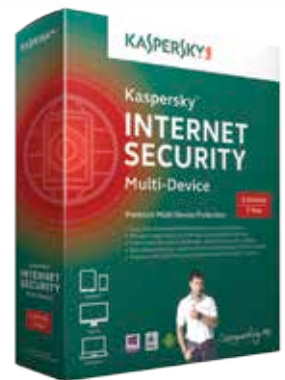


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