

Issue 206

SUMMER 2019

ISLE OF WIGHT PC USER
GROUP



HOT KEY

JULY 2019



In June Jonathan & Daniel from PC Consultants gave us a presentation on the subject of managed WiFi systems. We were then lucky enough to pick their brains on the subjects of WiFi, networking and other issues.

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The Isle of Wight Personal Computer User Group

We welcome anyone who has an interest in computers and related technology and what you can do with them.

We are a group which seeks to exchange ideas and new information.

Membership is £12 per annum

Our meetings are normally held on the first Wednesday of each month at

The Riverside Centre, Newport from 7.00 to 9.00 pm

Visitors are always welcome.

A charge of £2 is made per meeting, which includes tea or coffee during the break.

If you would like to know more about us, you are most welcome to come along to one of our meetings, or you can contact one of our Committee Members listed on page 3.

The Club web site address is **www.iwpcug.org**

We also have an e-group discussion area on
Yahoo groups: **iwpcusers@yahoogroups.com**.



FUTURE MEETINGS

<u>Date</u>	<u>Subject</u>	<u>Speaker</u>
3 July	Why I Need a NAS Server	Jonathan Burt
7 August	Summer BBQ	
4 September	TBA	
2 October	TBA	

ISLE OF WIGHT PC USER GROUP COMMITTEE

Chairman : David Groom

Secretary : Susanne Bone

Treasurer : Mike Hoar

Membership and Database Secretary : Roger Skidmore

Committee Member : Steve Sutters

Treasury Supervisor : Phil Rogers

Note: Contact details removed prior to publishing on the internet

Suggestions for new events, topics or speakers for talks are always welcome.

Please contact Steve Sutters, or any committee member, with your ideas.

If necessary we may be able to find a speaker for your subject.

Chairman's Report

Firstly may I say thank you to those who have contributed articles to this issue of HotKey. As you know its normally a hard task to fill the pages, and I often have to resort to articles from OpenSource.com or from my cousin in the USA, but this issue has neither, in fact it was a little difficult to fit the index on the front cover, and I had to shrink the space for the photo. It would be good to see some more articles from our members, anything on the subject of computing will be considered.

I realise the calendar on page 2 may look a little empty, the committee does have a number of possible speakers for September and October, but as yet nothing is 100% confirmed, the web site will be updated as soon as we can.

Our next meeting is the August BBQ, details of which are on page 6, note the earlier start time of 6:30 pm. Having had good weather last year I have my fingers crossed for this years event.

David Groom

Car Sharing / Lifts

It is possible that a number of our members do not attend our monthly meetings because they find transport to Newport difficult and the committee have wondered if it might be possible to arrange lifts for those members. With a membership as large as ours it is not always obvious who might like to attend but has difficulty with transport, and secondly, who might live nearby and be able to offer them a lift.

As a first step, if you would like to attend the meetings, currently can't get to the Riverside Centre on a Wednesday evening and would like to see if there is a nearby member who might offer you a lift, then could you please get in contact with me. We will then try and find a member who might be willing to give you a lift.

Linux Laptop Upgrade Experience

Recently David pointed out that you can get 60Gb 2.5" SSD hard drives for just under a tenner each from Novatech (April 2019). That seemed like a good deal when even a Gigabyte not so long ago seemed an unimaginable amount of space. Our Computability project has a certain throughput of now almost exclusively laptop computers where any upgrade money spent has to be seen to be good value. An upgrade to an SSD for a tenner has to be good value, especially when we only do Linux installations which typically take less than 10Gb.

We recently had six identical dual core laptops donated. The advantage of identical laptops is that you only have to install Linux once, then clone to the rest. Cloning Linux was always a bit of a black art because of the file system - Acronis will copy, but not make the destination disk bootable. EaseUS recently released their sector-by-sector cloning tool and this does the job just fine. As long as you can tell the hard disks apart, otherwise it is easy to clone the wrong way. Also the destination disk has to be the same size or bigger, unlike with Acronis which is copying files, not sectors.

In a burst of energy I installed Linux Mint 19 to one of the new 60Gb SSD's plus immediate updates and a selection of can't-do-without additional programs. I set up the EaseUS CD to copy from this disk to a bigger old HDD to see which drive allocation was which and then successfully cloned a further two. Then for unknown reasons the drive allocation reversed and I wiped my original disk. Oh dear. So I reinstalled Linux on a smaller, 40Gb SSD and then successfully completed the remaining three SSD's. So now all six donated laptops are running on tenner-a-go 60Gb SSD's.

The additional programs I install to Linux are XFE and Dolphin file managers, Xpad sticky note program, Foxit PDF reader, Chrome browser, gThumb image viewer, K3B DVD copying program, Audacious for its extra codecs, and I usually copy over a small video file for testing purposes. Linux Mint supplies everything else. Kexi database is also an extra, if required. All these programs are downloadable from "repositories" online.

I have tried various other Linux flavours but I find Mint far and away the easiest to use and least idiosyncratic. Cinnamon is the standard, while "Mate" is said to be lighter on resources. Both are available in 32bit versions for older hardware.

Roger Skidmore

ReadNotify

I wonder if others have come across this useful tool? Recently I wanted proof of delivery of a letter, and was going to send it by registered post care of Royal Mail. Anyone who has done this will know it costs a few pounds, and if the recipient does not want to receive the post he or she only has to refuse to sign for it. I am sure some dodgy traders know about this trick.

The quick and free alternative is to send an email. Normally emails do not confirm receipt, but with this tool you get a host of information back....when it was read, how many times it was read, how long it took them to read it, what computer was used to read it, and even where it was read.

If you go to http://www.readnotify.com/readnotify/email_tracking.asp ReadNotify allows you a free subscription for two weeks or twenty-five goes, whichever happens sooner. You have to give your email address and your name to sign up, then all you have to do is add .readnotify.com to the end of the email address you are sending to. They say you get an email confirmation when your email is read, but I am still waiting. However, if you sign in on their website you can check when it was delivered and when it was read and print it off as proof. Clicking on this brings up a lot more interesting information. The recipient never sees the .readnotify.com so never knows. Don't ask me how it all works, but it does! Even a monthly subscription costs less than one registered letter - and who wants to queue in Post Offices anyway?

David A'Bear

The Annual Club BBQ on Wednesday 7 August

Please note that once again Roger Skidmore has kindly agreed to host this years BBQ at his house at 47 Quay Street, Newport.

Starting at **6:30pm** (note the earlier start than normal meetings).

It would assist catering for the event if you could let me know if you are planning to come, no definite commitment needed, I just need some idea of the numbers expected. It would be appreciated if you could either call David on 873853, or email david@vectis-webdesign.com before 4 August.

As usual the invite is extend to members' wives / husbands / etc.

ProtonMail

CERN gave you the World Wide Web, and now gives you ProtonMail, a secure mailbox service.

ProtonMail is hosted on servers in Switzerland, below 1000 metres of granite and within the legal jurisdiction of a Swiss canton. Your data is fully encrypted so that they are unable to access it even if they want/are told to do so. It is end-to-end encrypted when you communicate with other ProtonMail addresses, and with others using PGP.

To open a new ProtonMail account, go to <https://protonmail.com/signup>. Addresses are `username@protonmail.com` OR `username@protonmail.ch`. It is free to obtain a mailbox, and to use the mail programmes they provide. The browser based interface is excellent, as is the Android app. In addition there is a VPN service which starts from free. For further information look here: <https://protonmail.com/support/knowledge-base/>

Once I had tried it out and was impressed I paid for 2 years at 2Euros/month. You can then use `username@pm.me` which is nice. Other functionality with the paid version is to store encrypted additional details with your contacts. This could include date of birth - apart from GDPR issues I do not want to hold private details regarding friends & relatives in a gmail account.

While writing this I looked into sending bulk messages to a mailing list. At present I use Thunderbird with various other mailboxes to do this, and mostly I use my ProtonMail for secure private emails via desktop or smartphone. However Protonmail capabilities now include creating Contact Groups and sending sending bulk messages to up to 100 users, via Bcc if required. Along with the capability to hold postal addresses and other details in encrypted form this makes ProtonMail even better.

See <https://protonmail.com/blog/protonmail-v3-15-release-notes/>

Alex Lawson

Parallel Computing on GPUs

Almost all new PCs will be dispatched with multiple CPUs, or more accurately, multiple cores. For reasons of heat dissipation and size, the CPU chip now comprises of 4, 8 or more cores to keep pace with processing demand. When many individual programs are running, the OS can allocate the work amongst those cores as required. Last year I gave a talk (“Multi-Core Coding”) explaining how a single program using multiple threads can utilise the full processing power of those cores. When researching for that talk, I kept coming across articles about utilising the power of the video card which will often contain many hundreds of cores on the GPU (Graphics Processor Unit). The GPU cores are not as general purpose as a CPU as they are optimised to process graphics commands. However there is nothing to stop us using their immense computing power to perform other calculations!

This article takes a look at CUDA (Compute Unified Device Architecture) which is a programming language developed by NVidia (the video card manufacturer). My first task was to purchase and install a new NVidia card (CUDA only runs on these video cards). I found a low end product (Geforce GT710) for less than £30 and it was very easy (even for me) to fit it in the PCI-E slot of my desktop PC. Even at that price, it has 192 cores. I had intended to continue using the onboard graphics VGA output for the monitor but Windows (Vista) was not keen, so I used the new card output. I downloaded a new driver (via my Linux setup) and the card worked beautifully. NVidia has an excellent driver site where it is possible to enter the card details and OS to get the latest driver for your setup.

Incidentally, this is all possible in Linux but I still do my development work in Windows, which is what we’ll explore here. The CUDA software is provided free online, but it is important to get the version that is compatible with your OS. For me, that is CUDA 6.0 and the documentation describes which versions of Visual Studio (VS) it will support. This is necessary because the final program will contain standard C/C++ code (run on the CPU) and CUDA code (very similar) that runs on the GPU. VS is not relevant if you simply want to look at CUDA samples which are supplied with the CUDA software. These samples cover a wide range of subjects from finance to fluid flow and the smoke particle simulation is especially impressive.

Having got the hardware and the software in place, it was time to write some code. In a new environment, getting some code to compile, link and run is always a cause for celebration as it provides a base that can be built upon. My first code simply added up a lot of numbers extremely fast – not very impressive really but it was done on 192 cores and in a parallel manner. A minor triumph. Then I hit a problem which turned out to have a fairly simple solution. Windows OS monitors graphics cards and will reset them if it thinks they might be in trouble (such as an infinite loop). I was getting this reset problem, but I thought it was due to some of my incorrect code. It was quite frustrating because the CUDA capabilities can only be restored on a full reboot if you are using the VGA output. Windows will only wait 2 seconds by default but it turns out that a registry item on this timeout can be set. Mine is now 180 seconds and I have not had the problem since.

I had been writing some ray tracing code that took hours to run on my 2 core CPU system. The revised CUDA code runs in minutes which is a stunning improvement. There are many tools to apply which will point at inefficiencies in my code, but at present I am pleased with the fact that it functions. The main issue for me was understanding how the CPU and GPU can work in harmony. In essence, the CPU begins the process and passes the calculations (in parallel) to the CUDA code to be processed on the GPU cores. When the GPU is finished, control passes back to the CPU for the outputs to be stored or displayed. Just when I was beginning to feel more confident, my book told me that there was no reason why programs should not be using the multiple core CPU capacity to full effect whilst the GPUs (or racks of video cards with multiple GPUs) are churning away. That is way beyond my capabilities at present.

In order to learn this new language, I bought a book which turned out to be less of a dummies guide than I had hoped. However, it emphasised that the design stage of the software is crucial in the parallel universe. Some problems fit much more easily into this architecture than others and when learning it is important to pick good examples. Ray tracing lends itself particularly well as each pixel can be calculated independently and the results accumulated to produce the final image. Also, data access is becoming as much of an issue as processing power – if the computing units can't get the data fast enough then they will sit idle. So using the correct type of memory caches can vastly improve program speeds. The fastest caches are also the smallest caches

which calls for careful design.

Now that I am more confident, it may be time to revisit those projects that were never properly finished due to lack of computing resource. Almost 20 years ago I had some code that I estimated would take 6 months to run. Maybe now it will become feasible to update using CUDA and I could be tempted to upgrade my card – some have over 5000 cores. A few decades ago, this level of processing power would have been in the supercomputing range. But it is now possible for the ordinary developer to have that amount of computing muscle sitting on their desk.

Many computer projects such as the recent photographing of black holes or climate change predictions rely heavily on massively parallel calculations. Undoubtedly it will be a necessity for future coders to be able to access the power of parallel computing.

Richard Burkill

Free Magazines in PDF format

Whilst searching for press releases about the Raspberry Pi I came across Raspberry Pi Press, the publishing branch of Raspberry Pi Trading, which produces many magazines and books each month. In keeping with their mission to make computing as accessible as possible to everyone across the globe, they make some of their publications available as free PDFs from the day they release new print versions. The following titles are available for free:

The MagPi magazine: the official Raspberry Pi magazine. As well as all the monthly issues of the magazine there is also the “Raspberry Pi Beginners Guide” available as a straightforward download of a PDF.

Hello World magazine: for educators who teach computing and digital making. To obtain this free you need to click the “subscribe for free” link, and each issue should be emailed to you.

Links to all the above can be found at
<https://www.raspberrypi.org/blog/raspberry-pi-press-newsstand/>

David Groom

Raspberry Pi 4

Last week the latest version of the raspberry Pi was launched, and it certainly is an upgrade from the earlier model.

The makers claim *“For the first time we provide a PC-like level of performance for most users, while retaining the interfacing capabilities and hackability of the classic Raspberry Pi line”*

Here are the highlights:

- A 1.5GHz quad-core 64-bit ARM Cortex-A72 CPU (~3× performance)
- 1GB, 2GB, or 4GB of LPDDR4 SDRAM
- Full-throughput Gigabit Ethernet
- Dual-band 802.11ac wireless networking
- Bluetooth 5.0
- Two USB 3.0 and two USB 2.0 ports
- Dual monitor support, at resolutions up to 4K
- VideoCore VI graphics, supporting OpenGL ES 3.x
- 4Kp60 hardware decode of HEVC video

You'll see significantly faster boot speeds, and much better performance for CPU-heavy tasks like emulation and media centre usage; much snappier all round!

The Raspberry Pi 4 moves to USB-C power socket meaning that you'll need a new USB-C power supply that can supply 5V at 3A.

The two USB 3.0 ports, give up to 10x faster transfer speeds than USB 2.0, perfect for connecting fast peripherals like SSDs and flash drives. There are also two USB 2.0 ports for connecting less speed-dependent peripherals like keyboards and mice.

For the first time, you'll be able to use dual HDMI displays with the Raspberry Pi as there are dual micro-HDMI ports that support up to 4Kp60, giving the ability to use your Raspberry Pi 4 with much larger displays with crisp, sharp, high resolution.

The shift to Bluetooth 5.0 (from 4.2 on the Raspberry Pi 3 B+) means you'll get twice the speed (2 Mbit/s) and four times the range (50m outdoors, 10m indoors) than you did with the previous generation. You'll get better power efficiency compared with Bluetooth 4.2 also.

So what can we expect to pay for all this? CPC Farnell currently list the following prices dependant upon on board memory. 1 GB board £33.07, 2 GB board £42.53, 4 GB board £51.97, all prices include VAT. This compares with £36.11 for the Pi 3 Model B+, which seems to make no sense to me.

It certainly would be nice to play around with one of these and see what the performance is like coupled with a SSD hard disk. It's a shame I got the Pi 3 Model B+ only a few months ago!

David Groom

Proof You Don't Need Modern Hardware

We often seem obsessed with getting the newest /fastest / most highest spec machine we can afford, but I thought it might interest you know about my "old" Linux server.

Most of you probably know I work as a website designer. I design all my web sites for running on an Apache webserver running on a Linux operating system. All the live sites are hosted by a number of hosting companies on their hardware. However whilst I am developing the web site I run it on a server in my office, "my development server".

The development server has been sitting on a shelf for so long I really have forgotten how old it is, or what its history might have been. It is possible I built it specifically for the task in hand, or alternatively I may have reused an old desktop machine I had lying around.

The other day I had a need to look at the servers specifications. It has a Gigabyte motherboard which seems to have been released around 2003, an Athlon 1.3Ghz processor (a single core 2 bit processor), 1 GB of RAM, and a 25Gb hard disk, the operating system was Ubuntu 9.04 (now 10 years old).

I needed to update the version of PHP I was running, and it wasn't really

possible to do this in Ubuntu 9.04, so I upgraded to Ubuntu 14.04. This does run on the old hardware, but it's a bit sluggish (the Ubuntu web site suggests a 2Gb dual core processor with 2Gb of RAM as the minimum requirements).

I purchased an extra 2Gb of RAM on eBay for £7.98; there are no dual core CPUs supported by the motherboard, but I've also bought an Althon XP2500 for £14.45, which I'm hoping will be good enough. If I'm lucky my spend of less than £23 will keep my 16 year old server running for a few more years.

David Groom

Font Viewer

Windows comes with its own installed fonts, and then if you install LibreOffice, desktop publishing software, and other programs you can soon find you have a very large number of fonts installed on your computer. The problem comes when you want to choose a font for a project you might be working on. With so many fonts available just how do you see what the text might look like for any given font?

Perhaps the most obvious solution is that in what ever program you may be working you simply change the font style, and see what the result is. But this is time consuming, and you can't immediately compare one font to another.

In Windows 10 if you look for "font settings" either in the settings menu, or from a search from Cortana you can see examples of what the text might look like for each font, but it is pretty limited - see the image below.

Fonts

Get more fonts in Microsoft Store

Available fonts

Type here to search

Filter by: All languages



Recently I needed a better way to look at fonts than this, when I was starting to design a logo for a new client. I wanted to see what the particular text the client wanted in his logo would look like in any given font. A quick search on the internet led me to Fontviewer which claimed to render all installed font families in a scrollable grid view, allowing you to change the size, color, background-color and displayed text, all at the touch of a button. So I installed it, and in use it fulfilled all it claimed.



Hopefully from the above screen shot you can see that I have been able to customise the text which will be displayed for each font, and to see it in all variants such as normal, bold, italic and bold italic.

As this page of HotKey is not printed in colour it might not be immediately obvious that the program can also change the font colour and the background colour, so that you can immediately see what the text might look like.

This program is a free download, and if you regularly work with font selection I would thoroughly recommend you download it from fontviewer.net .

David Groom

ImageGlass - an Open Source Image Viewer

ImageGlass is another open source basic image viewer, which, while simple, benefits from the speed that comes with being so lightweight, and it is a good choice for Windows users. It was written by a 28 year old Vietnamese developer. First released in 2012 it is now up to version 6, which I believe shows a reasonable degree of maintenance.

It supports reading over 70+ common image formats, including PNG, GIF, SVG*, WEBP*, HEIC, RAW.

When you are viewing an image from a directory it can show thumbnails of images in the same directory. A quick press of one of the menu buttons starts a slideshow of all the images in that directory.

A screen shot of the interface can be found on the back cover.

You can losslessly rotate or flip and then save the image you are viewing.

One of its interesting features is the ability to open image from clipboard directly. So if you have copied an image from say the internet by right clicking the image and copying it to the clipboard you can then open this in ImageGlass.

Another interesting feature is the “color picker” tool. When this is activated you can move the mouse cursor over the image, and it will show you colour value at that point.

As well as viewing the image you can convert it into one of 10 different image formats (so for example you could save a PNG image as a JPEG).

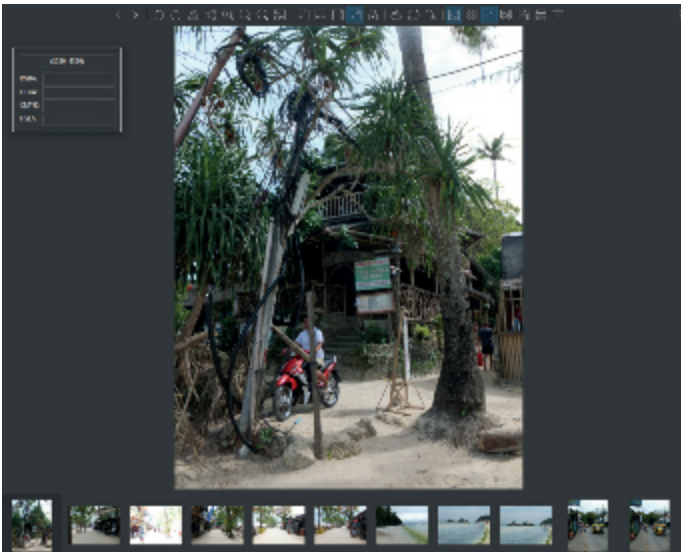
If you don't like the default look of the program there are different theme packs available to change the look of the interface.

The program can be downloaded free from <https://imageglass.org>

David Groom



At our April meeting Richard Burkill once again demonstrated his impressive ability to program animations, including as shown here a flying spitfire with rotating propeller.



A screen shot of the ImageGlass image viewer program, showing the main image being viewed, a thumbnail of the next images in the folder, and in the top left the color picker information. See story on page 15.

We try to publish HOTKEY quarterly in April, July, October and January
This edition was produced using Serif PagePlus X9
and printed by Desktop Studio, Duver Road, St Helens

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