

The WROCC

The Newsletter of the
Wakefield RISC OS Computer Club
For all users of the Acorn and RISC OS family of computers

Volume 31 – No. 5 – August 2013



RISC OS on a PandaBoard

HARDWARE

By Chris Bass – cr.bass@btinternet.com

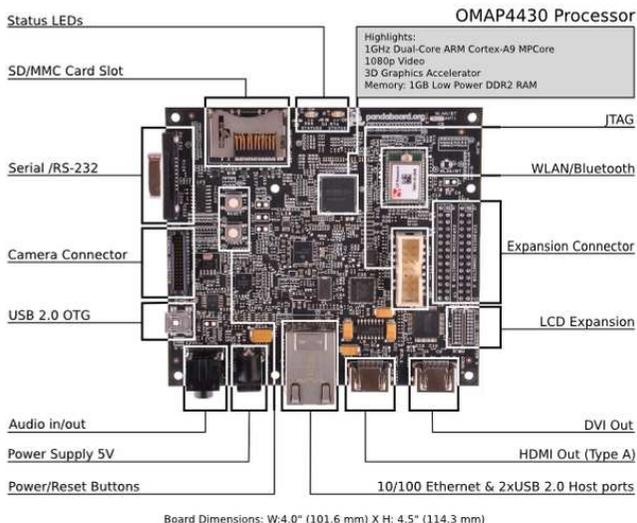
I recently purchased a PandaBoard ES from DigiKey in the US for \$182 (£117.12) but on its arrival three days later I had to pay a further £40.10 in duty and tax. This made it only marginally cheaper than buying it from DigiKey in the UK, which was £157.51 at the time! Anyway, this is my experience in getting it to work under RISC OS.

The board requires a 5 volt, 2 amp PSU with a 2.1 × 5.0mm power plug and a fast SD card with RISC OS on it. If you only have a VGA monitor then you will also need an HDMI to VGA adapter such as the Pi View. This is available from Element 14 or CPC for about £20.

Here is the layout of the board showing where all the

connectors go. Note that the video connector for RISC OS is the one labelled 'DVI Out' (Ubuntu only works with 'HDMI Out').

Having got all of the hardware together, the next step was to obtain an SD card with



Our Next Meeting – Wednesday 4th September 2013 ArtWorks 2

Richard Ashbery will be showing us more clever things you can do with ArtWorks, including how to produce seamless tiled backgrounds from swatches.

RISC OS installed. There were two solutions:

1. Purchase a fully working 32GB card from R-Comp (the PandaLand scheme) or CJE for £35.
2. Produce a card myself.

In fact I did both, by ordering a card from R-Comp through the PandaLand scheme and, whilst waiting for it to arrive, attempting the ‘DIY’ approach.

DIY SD card

I did some reading on the forums and found that the structure of the card was the same as that of the Pi: a 48MB FAT16 partition (seen as a DOS file called *PCLoader*) inside the *!Boot* folder on the ADFS partition. The differences from the Pi are that the files inside the *!Boot.PCLoader* partition are specific to the PandaBoard, and the hard drive image must be the plain vanilla HardDisc4 from the ROOL site.

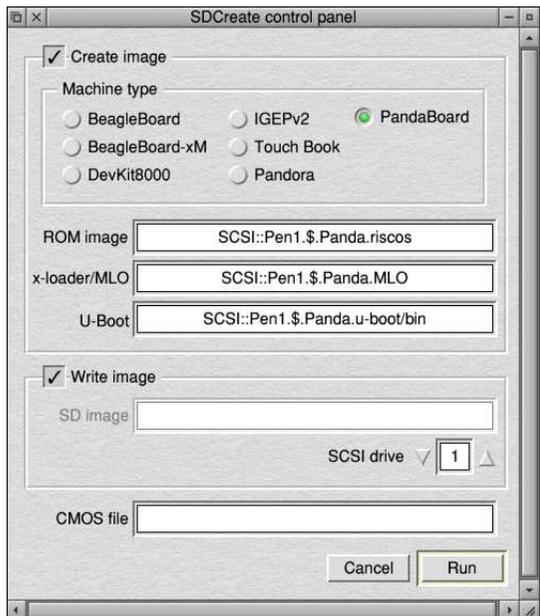
You will need to download several files (1, 2 and 3), as listed in the box below. I put them all in suitable locations on an ADFS formatted pen drive plugged into the Pi, as I will be using it to do the transfer to the SD card.

Creating the disc images

The SDCreate utility is used to create a SD card image. When run, it creates a FAT16 partition on a SD card before copying the ROM image and boot loader files there. It also creates a *Boot/scr* boot script and a *Cmos* file within it.

Files to Download

- 1) Latest ROM image from <http://www.riscosopen.org/content/downloads/other-zipfiles> – the Beta OMAP4 ROM download also contains SDCreate.
- 2) Latest !Boot folder from <http://www.riscosopen.org/content/downloads/other-zipfiles> – the full Beta HardDisc4 image as a self extracting file or as a tarball
- 3) Boot loader files from <http://www.cgransden.co.uk/pandaboot.zip>
- 4) The Raspberry Pi SD card image, from <http://www.raspberrypi.org/downloads> – the latest at the time of writing is RISC OS-2013-07-10-RC11.zip
- 5) Ubuntu can be found at <http://cdimage.ubuntu.com/releases/12.04/release> – the OMAP4 (Hard-Float) image is `ubuntu-12.04-preinstalled-desktop-armhf+omap4.img.gz`



The SDCreate utility can create the SD card image

Drag the ROM image (from ROOL), along with the *MLO* and *U-Boot/bin* files from Chris Gransden’s site to the relevant locations in the SDCreate window, then press the *Run* button. The result can be seen at the top of the page opposite.

Copy these files from the card to a suitable location on the ADFS formatted pen drive. The partition on the SD card is no longer required so can be overwritten in the next step providing it’s at least 2 to 4GB in size, but dependant on the size of the ‘Pi’.img file.



The disc image created by SDCreate

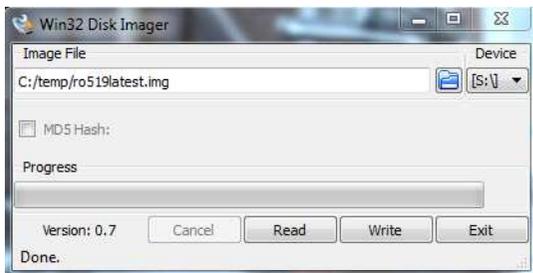
Writing an SD card

A Pi image file can be downloaded from the Raspberry Pi site at the address given for File 4 in the box on the left.

In Windows, use the Win32DiskImager from <https://wiki.ubuntu.com/Win32DiskImager> to write the 'Pi' .img file to the SD card – (just make sure the file has an '.img' extension for Win32DiskImager to find it). Press the *Write* button to write to the SD card. This can also be done using Linux or a Mac PC. Remove the SD card from the Windows PC and place it in the SD slot of the Pi after first dismounting and removing the working bootable SD card.

On the new card, open the *!Boot* folder with a Shift-double click, then open the *PCLoader* file with a double-click and delete the Pi loader files from within it. Replace them by copying the PandaBoard loader files from the pen drive to the partition. Delete the RISC OS files from within *!Boot* and replace them with the ones downloaded from the vanilla HardDisc4. Next delete the remaining folders in the ADFS root of the SD card and replace them with those from the vanilla HardDisc4.

Dismount and remove the SD card from Pi: it's now ready for the PandaBoard.



Using Win32 Disk Imager to write the Pi image

Setting up the Panda.

After the PandaBoard has booted it will need configuring to suit your setup, especially the monitor. Once completed, use the

`*SaveCMOS <file>`

command to save your settings and put this file on the SD card alongside the RISC OS ROM image in the *PCLoader* partition. The OMAP port of RISC OS now supports saving configuration settings in a CMOS memory chip so that they are kept when the power is turned off. This requires a small carrier board to be plugged in, which you can obtain for about £6 from ROOL or are given free when you join the PandaLand scheme. Follow the fitting instructions until you get to switching the PandaBoard back on after fitting the widget and you get the message to press the Escape key (the keyboard must be directly connected to a USB port, not via a switch or PS2 to USB converter). You will be sent to the supervisor prompt where you type

`*Configure FileSystem SDFS`

Installing Ubuntu

If you want to try Ubuntu on the PandaBoard, download the Texas Instruments OMAP4 (Hard-Float) preinstalled desktop image file (File 5 opposite). Extract it to obtain the 'ubuntu-12.04-preinstalled-desktop-armhf+omap4.img' file. Use Win32DiskImager to 'burn' it to a suitable SD card, preferably a fast one of at least 4GB, then insert and run it in the PandaBoard. It runs like a live CD in that it self installs and fills the whole of the SD card (apart from a small FAT16 partition containing the boot loader files). It takes a long time and that's it.

Acknowledgements.

Thanks to Andrew Rawnsley of R-Comp on his explanation of the HDMI ports and Widget information, and to contributors of the ROOL PandaBoard forum who helped with the format and file structure of the SD card.

I am keeping my fingers crossed that you will receive this in time to make sure that, if applicable, you have renewed your membership promptly in order to remain eligible for the free prize draw to be held at the September meeting. Please remember also that if you wish to be excluded from the draw for whatever reason, you should write to the correspondence address (see rear page), or email info2013@wrocc.org.uk as soon as possible. So far, two members (one of them being me) have asked to be excluded. The rules can be found on page 7 of the June issue. Remember too that we will be having a bit of a culinary treat at the October meeting in the form of cake and... something else.

Finally, I need to give early notice that two long serving committee members will not be seeking re-election at the AGM in January. If at least one of these vacancies cannot be filled, then the committee will not meet the minimum requirement laid down by the Club's constitution, which is three officers and three ordinary members. Simply changing the constitution to reduce this minimum requirement is really *not* the answer in my view, otherwise too much responsibility falls upon too few shoulders – “many hands make light work”.

Rather than wait until the AGM and hope for the best, which is not a very good way to plan, it would be better if we were able to identify potential replacements early. Ideally, they would be co-opted on to the committee in time for the final committee meeting of the present term of office on 11th November. This would help maintain continuity and also give newcomers the chance to dip their toes in the water before committing themselves. I would very much like to hear from anyone who might be prepared to offer their services, as without a sufficiently large and active committee the Club will struggle to survive, let alone continue to thrive.

Future of the WYSSC

Members may remember that some years ago Wakefield Council (WMDC) was proposing to sell off the land that the sports club and playing fields occupy, for housing development. There has been a lot of opposition to this, which is why it has rumbled on for so long. The primary objections relate to noise and disruption during construction (which would cut little ice with the planners), the loss of a valuable green space in the heart of the village, the loss of a much used venue within the village, the inevitable increase in traffic on Walton Lane and the very busy A61 Barnsley Road, lack of additional capacity in local schools, and so on and so forth.

The current situation is that new proposals were submitted to the WMDC Planning Dept in May and June. The intention now is to demolish the existing facilities and build 184 homes on the site. The sports club would be relocated to new facilities built on green belt land at Brook Farm, off Shay Lane just outside Walton in the direction of Crofton – about a mile to the south-east of the current site. The original proposal was for relocation to a smaller site further down Walton Lane from Sandal Hall Close.

Last time I looked, the plans of the new site layout were posted up on the wall at the top of the stairs at WYSSC, but might have been removed by the time you read this. As someone interested in the preservation and restoration of inland waterways, I was relieved to see that the proposed post-restoration through Walton of the derelict Barnsley Canal has been protected and is shown on the plans – it cuts through the Walton side of the proposed site. Even if these new proposals are accepted, either in their current form or after further modification, it will take some time to build the new facilities and road access – so, don't expect things to happen any time soon!

Kind regards
Rick Sterry

The July meeting was another of our occasional 'Pot-Pourri' evenings, which just means that it was made up of unrelated topics by different presenters. First on the stand was Steve Bass, despite the fact that he had also given the presentation at the June meeting – this goes beyond the call of duty. His theme was 'printing from RISC OS', and he started with a quote from the R-Comp web site, which states that if you were to ask a RISC OS user what the Holy Grail of printing was, the chances are he or she would say, "to be able to print at a decent quality to any kind of printer".



Steve Bass opened the evening by talking about printing

Printing from RISC OS

Steve then went on to describe the various ways by which this could be achieved, and they can be broken down into three basic methods:

1. Print directly from RISC OS to a printer connected to the 'host' machine.
2. Print to a network printer.
3. Print to a PDF.

Method 1 can be achieved with the Printers or Printers+ driver software (as supplied with RISC OS) and the appropriate Printer Definition File (which I shall refer to henceforth as PriDF in order to avoid confusion with Adobe PDF files). The problem, as we all know, is that PriDFs are not usually available for the latest printers. However, you can get round this by using the Gutenprint software and drivers from Martin Würthner, supporting a great many modern printers, especially Epsoms

– this is described on his website. GutenPrint is funded by donations, and the suggested initial amount for new users is £25-£30 unless you are on a very low income. Laser printers often don't need specific drivers, so if they support PostScript or PCL they can usually be made to work with an HP LaserJet driver. For Postscript printers the other option is to use either the PS2 driver or better still the PS3 driver.

Method 2 can itself be broken down into two basic alternatives:

- Printing across the network with the RISC OS drivers, which suffers from the same PriDF limitations as printing directly from the host machine.
- Printing across the network with the UniPrint (UniServer) software from R-Comp, which uses the printer driver on the Windows machine acting as the print server, thus overcoming the RISC OS PriDF problem.



Wednesday 4th September

Meeting – ArtWorks 2 with Richard Ashbery

Wednesday 2nd October

Meeting – Details to be announced

Wednesday 6th November

Meeting – Details to be announced

Wednesday 4th December

Meeting – Details to be announced

Steve did go into some detail of setting up UniPrint on networked machines, and also covered a number of utilities and protocols etc. related to printing under RISC OS. Although I won't be describing them here, I will mention them by name in case you want to look into them: RemotePrinterFS, PrintSpool, JDServer, Gutenprint + LPR, and IPP.

Actually, there is rather more to the practice of printing across a network, but again I will not be going into detail about it. You can:

- Connect directly to a single networked machine.
- Connect to a Print Server.
- Use a dedicated Networked Printer.

Within this context, in most cases there is no practical distinction between RISC OS machines with native ARM hardware (e.g. a RiscPC), and a Windows PC running Virtual Acorn (VA). A comment from the floor brought to light that in the case of UniPrint, a Windows machine running VA behaves rather like a RISC OS machine already networked to a Windows machine, without the need for networking software and the associated setting up IP addresses and so forth. In other words, it's a lot simpler and more user-friendly to set up UniPrint than is the case with physically separate networked machines.

Method 3 involves 'printing' to a PDF file, which can then be transferred to another machine with the necessary printing capability, e.g. by file sharing, email, etc. This can be done with Steve Fryatt's free PrintPDF software, which is a front-end to GhostScript, allowing PDF documents to be produced more easily under RISC OS. It adds a new 'PDF Printer' as part of Printers on the iconbar. Using this, any application which can print to paper can also create a PDF document with ease. Steve Bass uses the PDF3 PriDF supplied in the *PrintDefs.PrintPDF* folder of the PS3 driver download from Martin Würthner and John Tytgat. This allows PrintPDF to send

Useful Links

- GutenPrint and PostScript 3: www.mw-software.com
- UniPrint: www.rcomp.co.uk/rci/uniprint
- PrintPDF: www.stevefryatt.org.uk/software
- RISC OS Open: www.riscosopen.org
- Aemulor: <http://buyit.spellings.net>
- RemotePrinterFS: www.sbellon.de
- PrintSpool: www.hamiltoni.pwp.blueyonder.co.uk
- JDServer: www.davehigton.me.uk

PostScript3 data to GhostScript, but unlike the PS2 driver it is commercial software and costs £35. Alternatively, PrintPDF is supplied with a PDF PriDF, which uses the PS2 driver bundled with Printers. As I have already indicated, it is beyond the scope of this brief summary to describe everything that Steve talked about, and what I have described has inevitably been considerably shortened and simplified.

Takeaway Pi

The evening was rounded off by Peter Richmond, talking about his experiences with RISC OS on the Raspberry Pi, under the title "Takeaway Pi" for reasons that will become clear. He had intended to move on to the subject of tablets afterwards, but alas ran out of time. Peter had bought a Raspberry Pi and Starter Kit from Maplin, comprising a Pi model 'B' (512MB), Raspbian OS supplied on a 4GB SD card, mains powered 4-port USB hub, USB keyboard, USB optical mouse, 2.1A twin USB mains power supply, 1.5m gold-plated USB A to micro B cable to power the Raspberry Pi,



Picture: Peter Richmond



Peter Richmond followed with a further look at the R-Pi

hassle of having to create it on SD card from an image, so again he opted for convenience. He also invested in the Nut Pi software collection on 2GB SD card (also from ROOL), at a cost of £35 + P&P. The P&P is £2.50 per order, making the combined cost of the two cards £47.50. Details can be found on the ROOL site (search for “Pi”), though I did find some inconsistencies in the pricing within the site, particularly in relation to VAT. The Nut Pi (amongst other things) was mentioned in the write-up of the March 2013 meeting, which you can find in the April newsletter. Peter spent some time looking through and commenting on the Nut Pi software.

1.5m gold-plated HDMI cable and an N150 Nano Wi-Fi dongle for wireless connectivity.

This complete kit cost £80, but I’ve seen it reduced to £75 for short periods during promotions. You can pay less if you source all these parts separately, and indeed you may have some of them in the ‘junk box’ already, but Peter opted for convenience. It does not include a case, which Peter bought separately for about £4 – “more like a fried rice tray” according to him, hence the takeaway reference! One snag that he spotted was that the cases available do not have enough headroom to accommodate anything tall being plugged into the 26-pin General Purpose Input/Output (GPIO) connector, unless you leave the lid open.

As mentioned above, the kit came with Raspbian OS on SD card, but Peter also bought an approved 2GB SD card preloaded with RISC OS Pi, at a cost of £10 + P&P from RISC OS Open Ltd (ROOL). The OS is also available as a free download from the RaspberryPi.org site, but Peter didn’t want the

Eclectic software

There was plenty of space on the RISC OS SD card for Peter to gather what he considered to be additional essential software (freebies) for his new Pi: Calc, ZipEE, ViewXLS, PipeDream, OhpShow, PlaySound, KinoAmp, DigitalCD, SampleEd, Invaders, Chuckie Egg, Breakout2, X-Word, Cybertron and DareDevil – quite an eclectic mix! The final thing that Peter showed us to ‘perfect his Pi’ was a demo version of Aemulor Professional for the Pi, (also referred to as Aemulor Pi), which enables older 26-bit RISC OS software to run under the 32-bit hardware of the Pi. A fully featured time-limited demo version is available from Spellings, or you can purchase the full version for £15. Aemulor is also available from other dealers such as CJE Micro’s, but the price may vary. It works very well, and Peter demonstrated it running a 1992 version of the Cybertron game, without any problems caused by the use of an interlaced screen mode.

Peter had gathered some simple comparative image-rendering benchmarks to give an idea of the relative ‘real world’ speeds of a RiscPC (with StrongARM), A9home and the Pi. He used three bitmap files – a small and a large JPEG file, a TIFF file, and two ArtWorks (vector) files, the second of which involved a lot of complex drawing. As can be seen from the results on the left, the Pi is noticeably faster

Benchmarks

	RiscPC	A9home	R-Pi
JPEG 1	16.15	3.77	3.20
JPEG 2	36.06	5.65	4.90
TIFF	108.00	51.27	22.00
Artworks 1	7.00	1.00	1.00
Artworks 2	27.00	9.00	3.50

Image rendering times in seconds

than the A9home, and lightning fast compared to the RiscPC – not bad for a little pipsqueak!

The total cost of the hardware, SD cards and Aemulor came to around £155, although as mentioned earlier it is possible to spend less. Peter valued convenience and lack of hassle over cost, and he got it as everything worked pretty much perfectly first time with no fuss – mission accomplished!

New Risc/Pi Website

There is a new web site called risc/pi, dedicated to RISC OS and the Raspberry Pi. The site grew out of conversations at the South West Show, when several people expressed the view to Nigel Willmott that there was no focus to the platform since the demise of Drobe. If Nigel's name rings a bell, it is because he also exhibits at our show under the banner of North One Communications (Organizer).

Nigel and his brother Tim (who is the webmaster) set out "to create a website that would try to give as comprehensive coverage as possible to the converging worlds of RISC OS and Raspberry Pi". Nigel and Tim are very keen that the site is a success, so why not take a look at www.riscpi.co.uk ?

While we're on the subject of news sites, it's worth remembering www.riscository.com which is maintained by Vince Hudd. In a 'blog' format, the site has articles discussing news and events in the RISC OS market, and although updates depend on Vince's workload, it still manages to provide a good round-up of shows, software releases and general gossip.

The deadline for contributions to the next issue of the newsletter will be 25th August 2013.

Disclaimer: The Editor and committee of the Wakefield RISC OS Computer Club are not responsible for the contents of any article, letter or e-mail contained within this newsletter. All views expressed are those of the individual concerned, and do not indicate that WROCC, the Editor or the committee agree with any statements made.

About the Club

Chairman	Rick Sterry	01924 255515
	Rick@wrocc.org.uk	
Secretary	Derek Baron	01943 465236
	Derek@wrocc.org.uk	
Treasurer	Chris Hughes	01924 379778
	Chris@wrocc.org.uk	
Committee	Steven Bass	
	StevenB@wrocc.org.uk	
Committee	Steve Fryatt	
	SteveF@wrocc.org.uk	
Committee	Terry Marsh	0113 286 1764
	Terry@wrocc.org.uk	
Committee	Peter Richmond	01423 525011
	Peter@wrocc.org.uk	

Newsletter

Editor	Steve Fryatt
	Editor@wrocc.org.uk
Assist. Editor	Chris Hughes
	Chris@wrocc.org.uk
Proofreaders	John Arthur & Rick Sterry

Web site

www.wrocc.org.uk

Webmaster	Steve Fryatt
	Webmaster@wrocc.org.uk

Subscriptions

Full Membership	£7.50 in first year
	£15 per subsequent year
Printed Newsletter	add £7 per year
Meeting Visitors	£3 per meeting

Change your membership details (contact information, newsletter preferences, etc) by email: membership@wrocc.org.uk

Monthly Meetings

West Yorkshire Sports & Social Club
Sandal Hall Close, Sandal
WAKEFIELD WF2 6ER

7:45 p.m. on the first Wednesday in each month

Correspondence Address

Wakefield RISC OS Computer Club
3 Riverdale Avenue, Stanley
WAKEFIELD WF3 4LF

Member of the
Association of Acorn User Groups