Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

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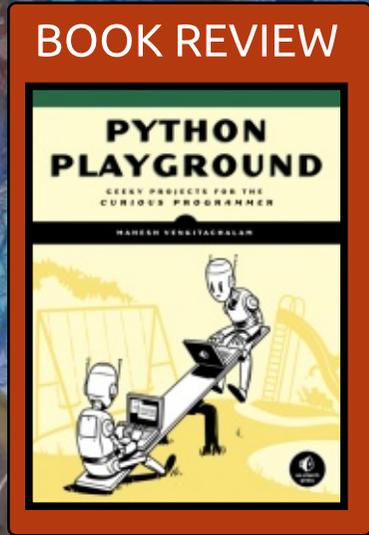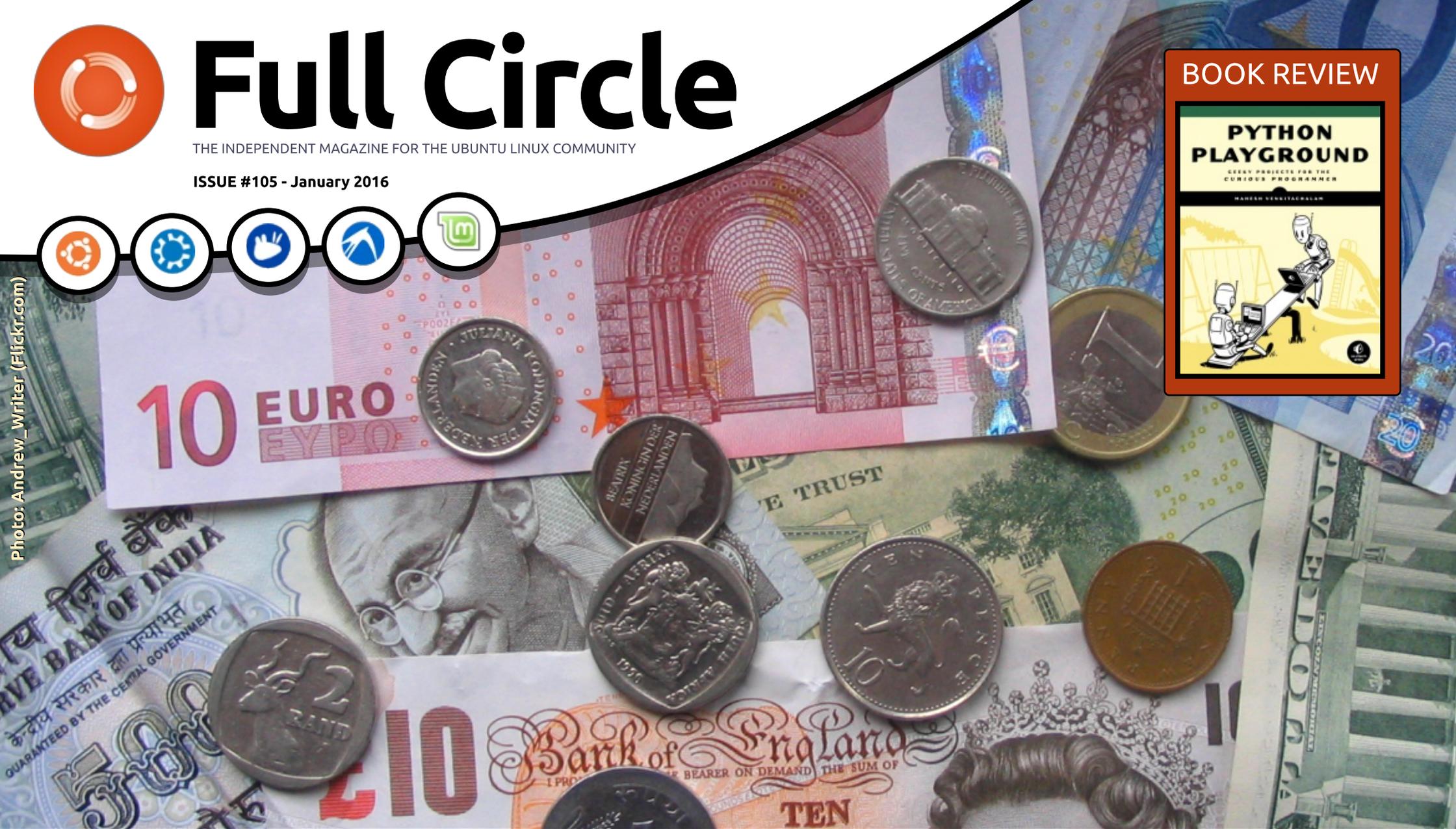
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EDITORIAL

WELCOME TO ANOTHER ISSUE OF FULL CIRCLE.

Welcome to the first Full Circle of 2016! We're back to a full house with Python, LibreOffice, Inkscape, LaTeX (for valentines day, of course) and the start of a new series on migrating from VAX/VMS. It's a bit over my head, but it's still an interesting read. Also very interesting is Tom's quick HowTo on using GnuCash for your Internet banking.

Elsewhere, I continue with my Arduino Brewduino (as I'm calling it) and the building of my 3D printer. I've also done a quick review of the new Vivaldi browser. Currently in beta2 state, but still quite impressive. Speaking of reviews; Charles reviews his new toy, the MyGica ATV582 TV box. I have a similar box (mine is DroidBox branded) and they really are nice.

In the world of Ubuntu phones we have OTA-9! This is a big one as it's a major update to the Unity that's been running on previous Ubuntu Touch versions. We're getting ever closer to the convergence! Whispers on the grapevine tell me that a convergence device will be unveiled soon. Probably as soon as next month.

You'll see it mentioned throughout this issue, but I'm experimenting with a new Full Circle podcast of sorts. I was hunting for a Linux/Ubuntu podcast that did just news. No chit-chat. Just news. And found nothing. So I'm thinking of starting the Full Circle Weekly News podcast. Just news, and only about 10 minutes per show. I've released episode #00 as a test/beta which has been refined in episode #01. Is it something you'd listen to?

All the best, and keep in touch!
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RASPBERRY PI FLAVOUR LETS ANYONE BUILD AN UBUNTU OS FOR ARM DEVICES

Running Ubuntu Linux on Raspberry Pi hardware -- and, maybe, ARM-based devices in general -- has become easier thanks to a new tool called Ubuntu Pi Flavour, which is developed by the team behind Ubuntu MATE.

The goal of the new tool is to "make as many Ubuntu flavours for the Raspberry Pi 2 as we can," according to its developers. That means releasing new Ubuntu-based GNU/Linux distributions that run on top of Raspberry Pi -- the tiny, inexpensive devices that lend themselves to IoT-type applications, among other endeavors.

Ubuntu Pi Flavour is not a project sponsored by Canonical, the company that supports Ubuntu. It's instead the work of the developers behind Ubuntu MATE, a derivative of Ubuntu that uses the MATE desktop interface in place of Canonical's Unity.

The tool grew out of efforts to build an Ubuntu MATE release that supported Raspberry Pi, according to the programmers.

Source:
http://thevarguy.com/open-source-application-software-companies/raspberry-pi-flavour-lets-anyone-build-ubuntu-os-arm-devi

UBUNTU AIMS FOR TRUE CONVERGENCE ACROSS DEVICES IN 2016

It seems Canonical, Ubuntu's parent company, may achieve its convergence goal in the new year. The move will allow you to get the same experience of Ubuntu whether on PC, tablet or phone. This will likely mean apps, too, will become cross-platform.

The news came from Ubuntu's Google+ page. It posted an image showing convergence on the Ubuntu platform.There are two desktop releases of Ubuntu planned for 2016 - Ubuntu 16.04 LTS (Long Term Support) and Ubuntu 16.10. With LTS releases, Canonical likes to keep the releases stable enough for deployment in an enterprise environment.

Unity 8 - the desktop environment that will allow for convergence - has not been used as the default desktop environment on any prior Ubuntu for desktop releases. Therefore, it may not be stable enough to be used as the default in the LTS release, but it will definitely be an option for more advanced users to select on the login screen.

Source:
http://www.neowin.net/news/ubuntu-aims-for-true-convergence-across-devices-in-2016

GOOGLE PLOTS WHATSAPP RIVAL WITH ARTIFICIAL INTELLIGENCE

NEWS

The service will pull information from the web in order to answer users' questions in addition to allowing people to connect with friends like a traditional messaging app. However, according to a report from The Wall Street Journal, Google could be planning a new way of going about getting information. Google's own chatbot service is headed up by Google old-timer Nick Fox, who is now VP of communication services at Google, with sources claiming the search giant has been working on the service for at least a year already. There are a number of popular messaging applications like WhatsApp and Messenger services offered by Facebook, and WeChat service offered by Tencent Holdings Ltd. Google also has a messaging service known as Hangouts. The latest rumors say that Google is working on an entirely new messaging service, but instead of just providing messaging capabilities, it will also feature chatbots. Google hasn't commented about the WSJ reports yet. Google may have a new artificial intelligence project in the works. Additionally, Google will allow other developers to hook in their own services via chatbots.

Source:
http://thevillagessuntimes.com/2015/12/27/google-plots-whatsapp-rival-with-artificial-intelligence/

DEBIAN LINUX FOUNDER IAN MURDOCK DEAD AT 42

Debian GNU/Linux founder Ian Murdock has died. He was 42. Murdock, who lived in San Francisco, is best known for creating the open-source distro in 1993. He had just last month started working for tech startup Docker in the city. On Monday afternoon, he posted a string of distressing and erratic tweets, revealing he had been arrested near his home by police, accused of assaulting an officer, and taken to hospital. He also threatened to kill himself. After people reached out to him, Murdock appeared to calm down, and vowed instead to clear his name. Murdock died that evening. His Twitter account has since been disabled.

Source:
http://www.theregister.co.uk/2015/12/30/ian_murdock_debian_founder

KALI LINUX NETHUNTER 3.0 ANDROID MOBILE PENETRATION TESTING PLATFORM RELEASED

Security researchers, ethical hackers and pentesters can now rejoice. The ultimate pentesting tool for Android smartphones and tablets, Kali Linux NetHunter 3.0 Android application, has been released by Offensive Security, the company behind Kali Linux. The application was in development for over a year. Kali NetHunter 3.0 boasts of a completely redesigned user interface which has been application centric. Offensive Security said that the new application will support new and complex attacks while providing support for managing your Kali chroot independently, including the ability to delete and rebuild the chroot, along with support for selecting individual metapackages in the respective chroot.

Source:
http://www.techworm.net/2016/01/kali-linux-nethunter-3-0-android-mobile-penetration-testing-platform-released.html

CANONICAL: ONE BILLION PEOPLE "BENEFIT FROM" UBUNTU LINUX

Ubuntu Linux has more than one billion users -- or at least people who "benefit" from it, whether they know it or not -- according to a recent statement from a Canonical executive about how many people actually run its open source operating system.

Dustin Kirkland, who works on Ubuntu Product and Strategy for Canonical, said in a blog post that "more people use Ubuntu than anyone actually knows." That language seems to be an admission that Canonical actually has relatively little idea how many people run Ubuntu, and Kirkland offered few hard statistics.

He did, however, provide some figures that give a sense of just how widely used Ubuntu is. The most concrete ones center on the cloud, where 20 million instances of Ubuntu were launched in 2015, according to Kirkland. He also remarked that Docker users have created Ubuntu images more than

35 million times.

Noting that Ubuntu is also in use on smartphones, Google's self-driving cars, the servers of lots of companies and plenty of other places, Kirkland concluded, "I bet there are over a billion people today using Ubuntu -- both directly and indirectly. Without a doubt, there are over a billion people on the planet benefiting from the services, security, and availability of Ubuntu today."

Source:
http://thevarguy.com/open-source-application-software-companies/canonical-one-billion-people-benefit-ubuntu-linux

Linux Kernel 4.4 LTS Is Unofficially Available for Ubuntu, Debian, and Linux Mint

As you may or may not know, Linux kernel 4.4 LTS was officially released on January 10, 2016, and Softpedia was the first to announce it, along with the details about the multitude of new features that were included in this long-term supported branch of the Linux kernel.

Arne Exton is known to immediately build a custom kernel for Ubuntu, Debian and Linux Mint systems based on the latest stable and most advanced Linux kernel release, version 4.4 in this case, which users can install right now on their supported GNU/Linux operating systems (see below for installation instructions).

But first, a few technical details that you need to know before attempting to install this custom Linux kernel package on your OS. The kernel 4.4.0-0-exton package that has been compiled by Arne Exton is the equivalent of the Linux kernel 4.4 found on the kernel.org website, it is supported only on 64-bit systems, and has been compiled the same way as all official Ubuntu kernels are.

"I have compiled yet another Ubuntu/Debian kernel for 64-bit systems. This time kernel 4.4.0-0-exton, equivalent to Kernel.org's latest stable kernel 4.4.0 released 160110," said Arne Exton for Softpedia. "My self-compiled Ubuntu kernels can be used in all types of modern Ubuntu systems,

including Mint."

Source:
http://news.softpedia.com/news/linux-kernel-4-4-lts-is-unofficially-available-for-ubuntu-debian-and-linux-mint-498837.shtml

GNOME Software Now Available in Ubuntu 16.04, with a PPA

One of the most interesting things that came out of the latest Ubuntu Developer Summit was the fact that Canonical wanted to ditch the Ubuntu Software Center for GNOME Software. This information has been very well received by the community, which is not terribly fond of that particular application.

In fact, users have been asking why GNOME Software isn't available in the daily build of Ubuntu 16.04 LTS. The launch of this OS is planned for April 2016, so there isn't much time left. It turns out that they have been working on this transition, but it's not as simple as you might think, and a lot of things depend on it.

The Ubuntu developers are not yet ready to push the modified GNOME Software into the main Xenial branch, and there still a few problems that have to be solved before that happens.

Source:
http://news.softpedia.com/news/gnome-software-now-available-in-ubuntu-16-04-with-a-ppa-498977.shtml

Lubuntu 16.04 LTS (Xenial Xerus) Has Been Ported to Raspberry Pi 2, with LXQt

Built with the Ubuntu Pi Flavour Maker tool, which we've introduced you to last month, made by the Ubuntu MATE team, the Raspberry Pi 2 port of the upcoming Lubuntu 16.04 LTS (Xenial Xerus) operating system is currently in development stage; but at least we see some progress with the implementation of LXQt in Lubuntu.

"A nice experiment made by wxl from the Lubuntu QA Team: running Lubuntu Xenial Xerus on a

Raspberry Pi 2, with LXQt desktop. Made with Ubuntu Pi Flavour Maker," said Rafael Laguna in the brief announcement. "And that's all. Enjoy Lubuntu in your new Pi. Remember this is just an experiment, it may be unstable."

If you want to test the Lubuntu 16.04 LTS (Xenial Xerus) operating system on your Raspberry Pi 2 single-board computer, you will have to download the experimental image, install it on an SD card, upgrade to the Xenial branch, and then follow the Lubuntu Wiki guide to install the LXQt packages.

Source:
http://linux.softpedia.com/blog/lubuntu-16-04-lts-xenial-xerus-has-been-ported-to-raspberry-pi-2-with-lxqt-498995.shtml

SCaLE 14x, DAY 1: Shuttleworth delivers the grand vision for Ubuntu

Mark Shuttleworth praised the differences and diversity in the Ubuntu community. He said the differences in what people are doing and their motivations is what makes the Ubuntu community strong. "There is a great misconception that Ubuntu is what I want," he said. "It's not. Ubuntu is the son of what many different diverse groups want. What we struggle and fight for is the framework for collaboration that enables people to get what they want."

He then talked about how Ubuntu is innovating with changing times: they developed Snappy to offer a much more secure, sandboxed Ubuntu experience to enable people to use Ubuntu in a variety of devices such as drones, Internet of Things, artificial intelligence, smart cars, etc.

During the Q&A session, someone asked about people taking Ubuntu and creating their own stuff with it, by which I assume he meant derivatives. Shuttleworth said that he thinks that's a good thing; people can do whatever they want to do with Ubuntu. Then he also mentioned that they are trying to avoid Snappy having the fragmentation Android is experiencing, because, irrespective of where you are

running Snappy Ubuntu Core, you are running the same code everywhere.

Source:
http://www.cio.com/article/3025630/linux/scale-14x-day-1-shuttleworth-delivers-the-grand-vision-for-ubuntu.html

Ubuntu Phone OTA-9 Update Received Well by Users, Nexus 10 Port to Be Removed

According to Mr. Zemczak, the OTA-9 update has been received well by Ubuntu Phone users, but only those lucky enough to get it in the first hours. However, the rest of them should be able to upgrade to OTA-9 in the coming hours, so make sure you keep checking for updates regularly.

"OTA-9 phased upgrades are in progress! Just in a little while all users should be able to upgrade. We're also really happy that the update itself was so nicely welcomed," says Łukasz Zemczak, Ubuntu Foundations, in his daily report, which we received as an e-mail dated January 27, 2016.

As reported a few days ago, the OTA-9.5 hotfix will enter final freeze on January 29 and will land for all Ubuntu Phone users on February 10, 2016. Then, the devs can finally concentrate all of their efforts on the next major update, OTA-10, which will bring even more cool features.

Source:
http://news.softpedia.com/news/ubuntu-phone-ota-9-update-received-well-by-users-nexus-10-port-to-be-removed-499523.shtml

After the Christmas holidays, it's usually time for me to take stock of my work equipment (computers and servers), and see what I can do while I'm still on holidays to make life simpler. This time around, I wanted to configure an internal Bind9 DNS server, so I can use internal domains for accessing servers, virtual machines, NAS, other computers, and so forth. Since my test area is Ubuntu 15.10 on Vagrant, I'll cover all the steps (including the steps for Vagrant).

STEP 0: CONFIGURE VAGRANT BOX

If you're setting up Bind DNS on a standalone device, or on a virtual machine that is already configured, you can skip this step. Personally, I think Vagrant is a wonderful way to test configurations, but I will be migrating the Bind9 DNS server to an Intel NUC, once the new skylake models are available.

```
vagrant box add ubuntu/wily64
```

This command adds the official Wily Werewolf 64-bit Vagrant Box to your system. You can skip this and go straight to the init, but I prefer to have local copies of certain base boxes, as I spin up a lot of vagrant boxes.

```
vagrant init ubuntu/wily64
```

This will initiate a Vagrantfile that uses the ubuntu/wily64 box from above. If you haven't added the box using the box add command, it should work anyway (as this is an official image). If not, you may need to supply the URL (see the Further Reading section for a link to the webpage).

You'll also want to set up a private network IP (if you plan to actually use the DNS). To do so, edit the Vagrantfile, and edit the line that reads 'config.vm.network "private_network"'. The IP can be pretty much anything you'd like (provided it isn't already in use). If you're going to use the DNS outside the host computer, you'll need to instead set up a public_network. Since this is a VM, I

stuck with a host-only network, as, if my computer isn't running, neither is the VM (nor do I need to have access to the test DNS from anywhere else).

Lastly, you'll want to start the Vagrant box with:

```
vagrant up
```

STEP 1: INSTALLING

I recommend installing 3 packages - bind9, bind9-docs, and dnsutils. Bind9 and the -docs package are important, as they will be the actual DNS server. Dnsutils contains a bunch of useful tools for debugging DNS.

STEP 2: BASIC CONFIGURATION

Open/edit the correct file using the following command:

```
sudo vim
/etc/bind/named.conf.options
```

If you'd prefer to use something like emacs or nano, substitute vim

for that. If you're doing this in a graphical environment, you're welcome to use anything you prefer. If working in Vagrant, you'll be limited to CLI. I'll also be referring to line numbers. If your vim isn't displaying the numbers, you can toggle them with the command ":set number".

STEP 2A: FORWARDERS

Since we're focusing on internal connections, any outside IPs (which will be requested from this server as well) can be safely called from existing DNS. This is what Bind9 calls "forwarders" - they are essentially the IP addresses of the DNS that should be checked, if the domain isn't contained in the local copy. I'd recommend using the Google DNS, but if you want to use your ISP's, you simply need to know the IPs of them. Find lines 13-15 (that starts with // forwarders {}), and make it look like this:

```
forwarders {
    8.8.8.8;
    8.8.4.4;
};
```

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The big change here is replacing line 0.0.0.0; with 8.8.8.8; and 8.8.4.4; (the IPs for Google's DNS). Also, make sure you uncomment the entire block. If you're using vim, use a quick 'Esc' (to leave edit mode), and then save and quit with: :wq

STEP 2B: SETTING UP ZONES

You'll need to open a new configuration file:

```
sudo vim
/etc/bind/named.conf.local
```

This file should be largely empty (on a fresh install, at least). Before we can make any edits, we need to know what our IP address is. Typically, it's something like 192.168.0.X, or 192.168.1.X (for internal networks). To find out what your IP address is, you can run the command 'ip addr'. If you're running Vagrant, you'll have a few different interfaces - find the one that uses the private or public network IP you added to the Vagrantfile. If you're at a physical computer with multiple internet connections, I'll have to assume you know which IP to use. It's important to note only the first 3

sections of the IP (so ignore the last number).

Also, select a local domain you'd like to configure. I selected lswest.local, simply because it won't interfere with existing domains (if you use google.com, for example, you will not be able to reach the google homepage).

Now, in the named.conf.local file, you'll need to add the lines shown top right.

The section that reads "in-addr.arpa" is required for a DNS IPv4 reverse lookup. For more information, see the wikipedia link in Further Reading. Type indicates whether the DNS is a master (primary), or a slave (secondary). While this is a complicated distinction to fully understand, for the time being it's safe to assume any local Bind9 DNS zone will be a master. The 'notify no;' on the internal IP indicates whether or not zone notifications are to be sent to slaves when changes occur. As this is a master without slaves, it's not technically necessary. However, since this is for all IP addresses in the network, it's useful to include (to avoid issues down the line).

```
zone "lswest.local" {
    type master;
    file "/etc/bind/db.lswest.local";
}

zone "0.168.192.in-addr.arpa" {
    type master;
    notify no;
    file "/etc/bind/db.192";
};
```
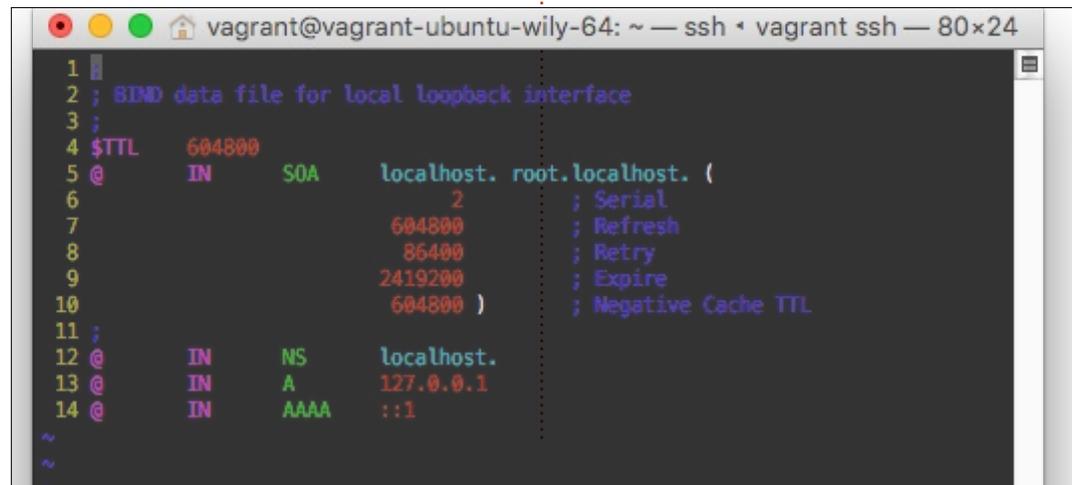
Now we need to create the db files we refer to in the file. To start with, I'll focus on the local domain.

```
sudo cp /etc/bind/db.local
/etc/bind/db.lswest.local
```

Now we'll need to open and edit the file:

```
sudo vim
/etc/bind/db.lswest.local
```

The file should look like the following:

The changes we'll need to make:

• In line 5, we'll need to change localhost. to domain. (a fully qualified domain name - fqdn) So, since the domain is lswest.local, the line will read "lswest.local.". Make absolutely sure there is a trailing period.
• Also in line 5, we'll need to edit "root.localhost." This is actually an email address (but without an @). It isn't terribly important what you

put here, but I'd recommend at least using your username. So root.localhost. becomes "vagrant.localhost.".
• You'll need to also edit line 12 to be the domain name you chose in 1. So we would edit this to read "lswest.local."

SUBDOMAINS

Now is the time to actually create subdomains. I'm going to focus only on A records, and possible CNAME (canonical name) entries. MX Records are also common, but I don't know how often you'll want to really configure MX records in a local network. If you do, the process is the same.

I'm going to create 2 subdomains - nas (fqdn: nas.lswest.local), and web (fqdn: web.lswest.local). One will point to the physical NAS I have in the network, and the other will point to the vagrant box I use for web development.

I'll also set up a CNAME entry - vagrant, which I'll point at the web subdomain.

The file will then look like the text shown top right (from line 16 onwards).

The lines that start with a semi-colon are comments, and serve to just make the file more readable. As you can see, you point the CNAME to the fqdn of another server. As you can probably figure, this is because CNAMEs are simply aliases.

STEP 3: REVERSE LOOKUP

This step is optional. If you're not planning to do reverse DNS checks on IPs (to find domains), you can skip this. However, it's good practice, and may come in useful.

First, we must copy the default db.127 file:

```
sudo cp /etc/bind/db.127
/etc/bind/db.192
```

Once done, open the file. It will look similar to the db.lswest.local file from above. We need to make the following changes:

Line 5: change "localhost." to the fqdn from earlier.
Line 5: Change root.localhost to the email you used earlier.

```
; A Records

nas        IN        A         192.168.0.4
web        IN        A         192.168.33.10

; CNAME Records

vagrant    IN        CNAME     web.lswest.local.
```

Line 12: change "localhost." to the fqdn from earlier.
Delete line 13 (the pointer). We'll be replacing this entirely later.

We now need to add the entries. After line 12 (the NS line), add the following line:

```
4         IN        PTR
nas.lswest.local.
```

The 4 is the last number of the IP address from db.lswest.local. Since this is a reverse lookup for 192.168.0, we need only the last digit. It is also why I left out the web value, as the IP is 192.168.33.10 - if I wanted to reverse lookup this, I'd need to set up a zone for 192.168.33. However, as my Vagrant installs don't generally survive long, I don't find the effort necessary. The CNAME doesn't get a pointer, as it's not assigned to an IP.

Save and close the file (:wq in vim).

STEP 4: RUN SERVER, AND CONNECT

It's now time to start the Bind9 server. To do so, run the following:

```
sudo service bind9 start
```

Now you need to enter the DNS on the machine you want to use it from, this could be done in the network manager in Ubuntu, or wherever you may configure a DNS on the OS of choice.

Use the IP for the server we configured earlier.

STEP 5: TESTING

Once your DNS is configured, you should be able to connect to one of your servers using the domain name. If your browser initiates a search instead of pulling up the webpage, make sure you manually add http:// before the

COMMAND & CONQUER

domain.

If the domain doesn't resolve properly, you can check it using dig. The command for that looks something like this:

```
dig nas.lswest.local
@192.168.15.3
```

The @ indicates the DNS to check. If you've already changed your DNS IP, it shouldn't be necessary. If, however, you're not getting the results you expect, it may be useful.

STEP 6: LOGGING

If you run into issues, you'll want to enable logging. AppArmor technically has a rule for bind9 already, but the folder in /var/log doesn't exist. You'll want to do the following:

```
sudo mkdir /var/log/named/

sudo chown bind:root
/var/log/named/

sudo chmod -R 775
/var/log/named/
```

That should result in a log file (once the service was restarted). If not, you'll want to check the third link in the Further Reading section.

I hope this article is interesting for anyone who may, like me, be a web developer (or just simply run a lot of devices on their internal network). If you enjoyed the article, and have any questions, issues, or suggestions, feel free to reach out to me at lswest34+fcm@gmail.com.

FURTHER READING

https://atlas.hashicorp.com/ubuntu/boxes/wily64 - URL to the Wily64 box.

https://en.wikipedia.org/wiki/Reverse_DNS_lookup - Reverse Lookup wikipedia article.

http://askubuntu.com/a/469867 - Permission errors with Bind9

Lucas has learned all he knows from repeatedly breaking his system, then having no other option but to discover how to fix it. You can email Lucas at: lswest34@gmail.com.

EXTRA! EXTRA! READ ALL ABOUT IT!

Our glorious news reporter (Arnfried) is posting regular news updates to the main Full Circle site.

Click the NEWS link, in the site menu at the top of the page, and you'll see the news headlines.

Alternatively, look on the right side of any page on the site, and you'll see the five latest news posts.

Feel free to discuss the news items. It's maybe something that can spill back from the site into the magazine. **Enjoy!**

THE FULL CIRCLE WEEKLY NEWS

A short podcast (<10min) with just the news. No chit-chat. No time wasting. Just the latest FOSS/Linux/Ubuntu news.

RSS:
http://fullcirclemagazine.org/feed/podcast

Welcome back to our Real World programming series. Last time, we programmed the RPi to turn on and off an LED when a button was pressed. Very simple, but this got us started. This month, we will do another simple project, a traffic light simulator using 3 LEDs, one Red, one Yellow and one Green. For the most part, the code is very similar to what we used last month, so you shouldn't have any problems. If you have any questions, I suggest you look at last month's article which should answer any of your concerns.

First, let's look at the schematic and the breadboard (below right).

Notice that the wire colours correspond to its 'job', with the exception of the orange wire. The red wires supply 3.3 volts. The green wire controls the green LED, the yellow wire controls the yellow LED, and the orange wire controls the red LED, since the red wire is already being used.

You should also know that the pins being used should work on a RPi v1a/b, RPi v1b+ and RPi v2b.

The red LED cathode is connected to GPIO 17 (Physical pin 11), yellow LED cathode is connected to GPIO 23 (Physical pin 16), and the green LED cathode is connected to GPIO 22 (Physical pin 15). The Anodes of all three LEDs are connected to one side of 220 Ohm resistors and the other sides are connected to a common 3.3
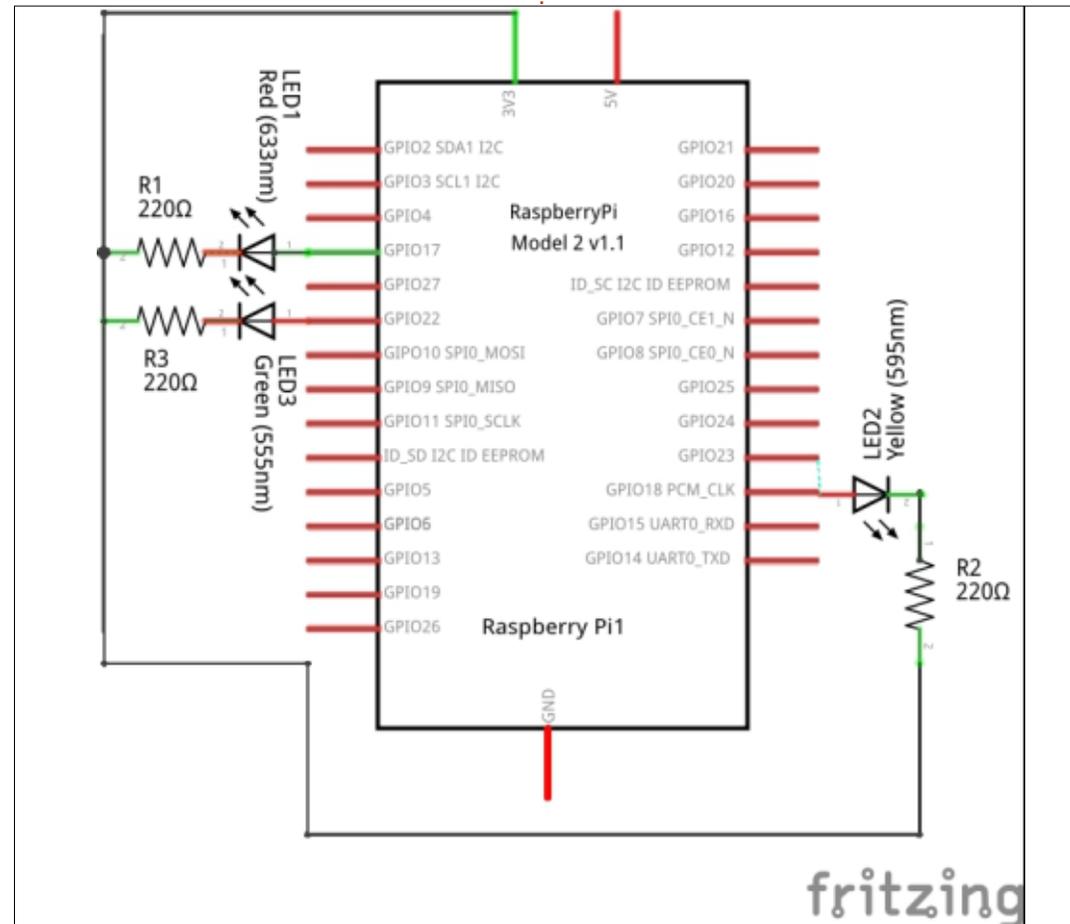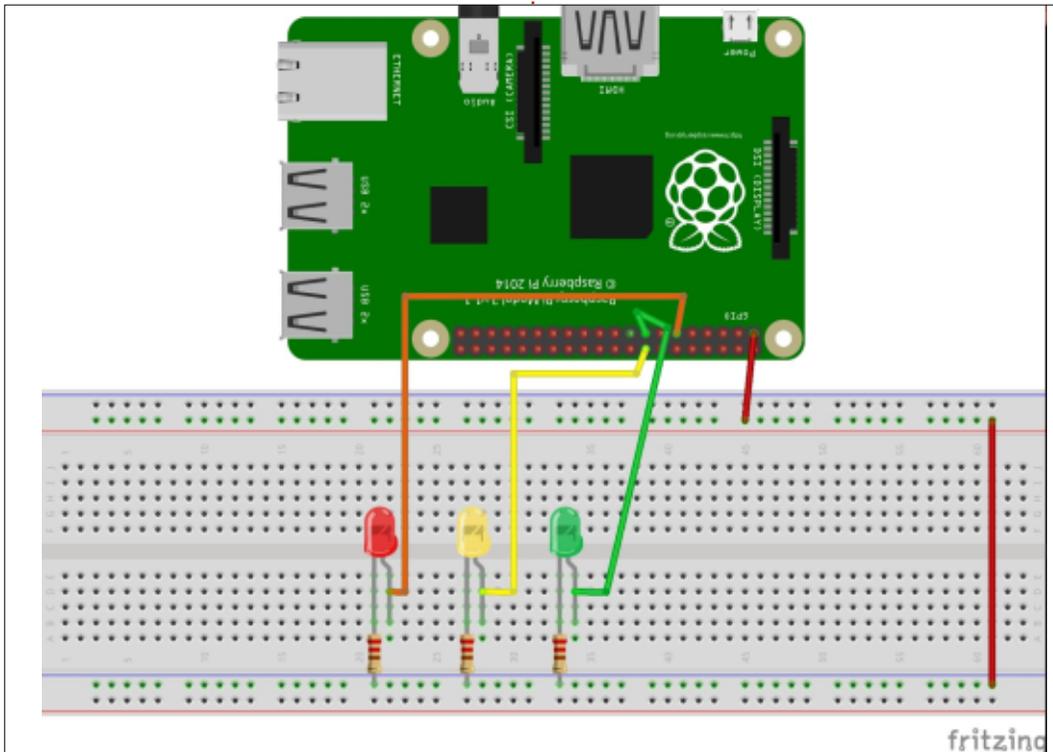
VDC. We don't need the ground voltage for this particular project.

Since I've driven only in the U.S. I've based the simulation on our traffic patterns. Long red light (10 seconds), green light is usually shorter than the red light time (8 seconds), and the yellow light is fairly short (2 seconds). These values are currently hard coded in the time.sleep() function calls. Feel free to change them as you see fit.

Now let's start working through the code.

```
#!/usr/bin/env python

# Traffic Light Simulator
# Written by G. D. Walters

#-------------------------------

import RPi.GPIO as GPIO
import os
import time
import datetime

#-------------------------------

RedLedPin = 17
YellowLedPin = 23
GreenLedPin = 22
```

The first 9 lines are our standard import statements and a few comment lines. The next three lines define the BCM pin numbers for our LED pins. If you wish to use

```
def setup():
    GPIO.setmode(GPIO.BCM)                  # Numbers GPIOs by physical location

    GPIO.setup(RedLedPin, GPIO.OUT)         # Set the 3 LedPins mode as output
    GPIO.setup(YellowLedPin, GPIO.OUT)
    GPIO.setup(GreenLedPin, GPIO.OUT)

    GPIO.output(RedLedPin, GPIO.HIGH)       # Turn off LEDs
    GPIO.output(YellowLedPin, GPIO.HIGH)
    GPIO.output(GreenLedPin, GPIO.HIGH)
```

physical pin numbers, be sure to change the GPIO.setmode() line in the next routine (top right).

As I mentioned above, the GPIO.setmode needs to be changed from 'GPIO.BCM' to 'GPIO.BOARD' if you want to use the physical pin numbers instead of the BCM numbers in our definitions. The next three lines set the LED pins as output pins, and then turn all three LEDs off to start the program by setting the output value to HIGH.

```
def LEDLoop():
    print "Green On..."

GPIO.output(GreenLedPin,0)
    time.sleep(8)

GPIO.output(GreenLedPin,1)
    print "Green Off..."
    print "Yellow On..."

GPIO.output(YellowLedPin,0)
    time.sleep(2)

GPIO.output(YellowLedPin,1)
    print "Yellow Off..."
    print"Red On..."
    GPIO.output(RedLedPin, 0)
    time.sleep(10)
    GPIO.output(RedLedPin,1)
    print "Red Off..."
```

The LEDLoop routine is very simple:
• We print on the console "<color> On…",#
• Turn the LED on by setting the output value to 0 or low,
• Sleep for a designated period,
• Set the output value of the pin back to 1 or high,
• Then print that the LED is now off.

This is then duplicated for the Yellow and Red LEDs. The loop() routine simply forces the

```
def destroy():
    GPIO.output(RedLedPin, GPIO.HIGH)        # led off
    GPIO.output(YellowLedPin, GPIO.HIGH)     # led off
    GPIO.output(GreenLedPin, GPIO.HIGH)      # led off
    GPIO.cleanup()                           # Release resource

if __name__ == '__main__':              # Program start from here
    setup()
    try:
        loop()
    except KeyboardInterrupt:  # When 'Ctrl+C' is pressed, the child program destroy()
will be executed.
        destroy()
```

LEDLoop() routine to be called over and over until the user hits <CTRL> C on the RPi keyboard.

```
def loop():
    while True:
        LEDLoop()
```

The destroy routine and the main loop are the same as last month. We simply set all the LED pins to high, turning them off, and then call GPIO.cleanup().

I'm not sure that we could make a much simpler program to do what we need to do.

If you want, you could duplicate the 3 LEDS and make an intersection simulation before next time.

Next time, we'll have something that is a bit more challenging. Until then, happy programming.

Greg Walters is owner of RainyDay Solutions, LLC, a consulting company in Aurora, Colorado, and has been programming since 1972. He enjoys cooking, hiking, music, and spending time with his family. His website is www.thedesignatedgeek.net.

## THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH
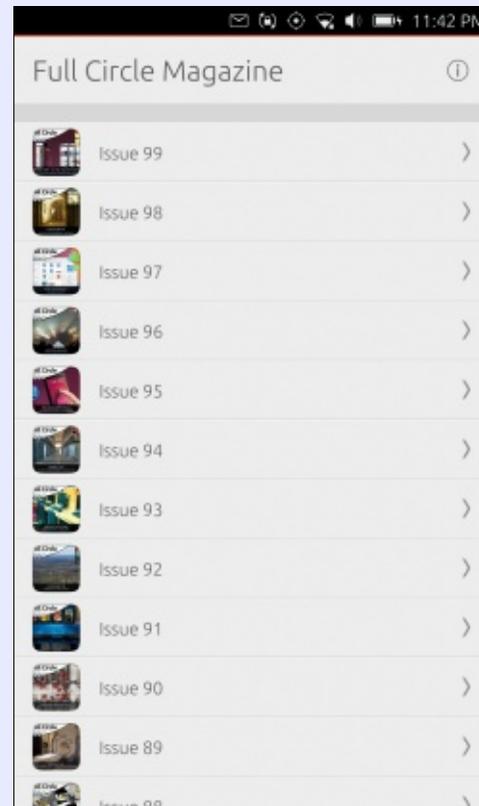
B**rian Douglass** has created a fantastic app for Ubuntu Touch devices that will allow you to view current issues, and back issues, and to download and view them on your Ubuntu Touch phone/tablet.

INSTALL

Either search for 'full circle' in the Ubuntu Touch store and click install, or view the URL below on your device and click install to be taken to the store page.

https://uappexplorer.com/app/fullcircle.bhdouglass
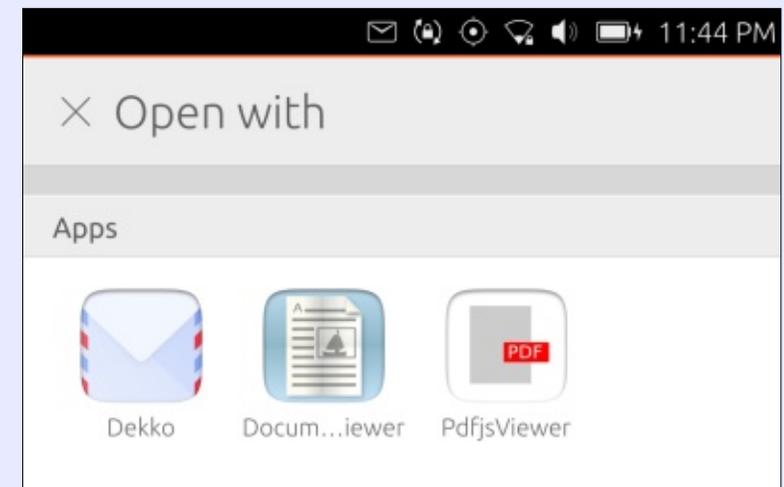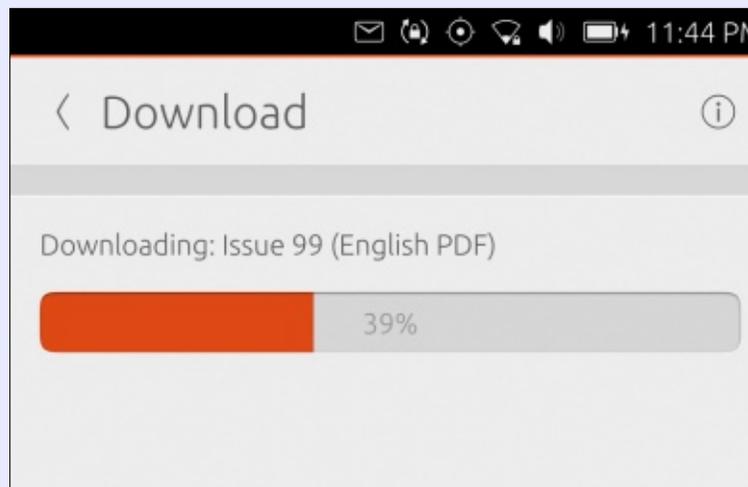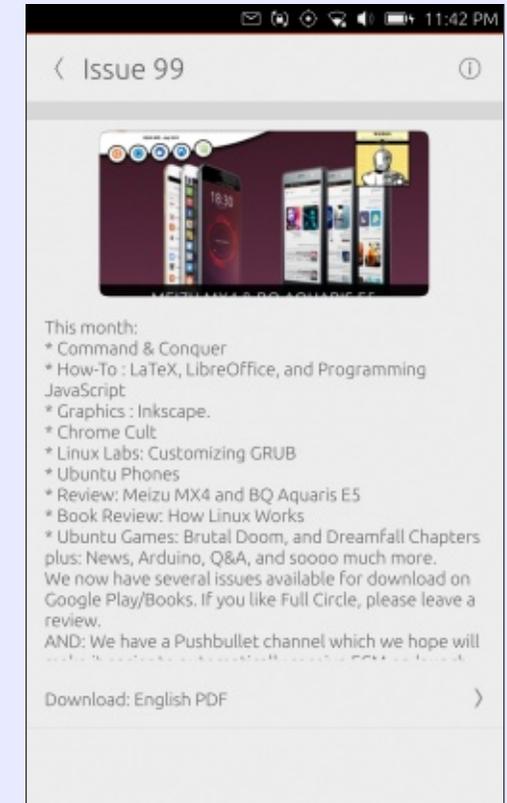
Portable Document Format (PDF) is a handy way to share documents when you need to control what the reader can do with the content. You can make the document where others cannot change or even comment on the contents of the document. You can secure the document so that the reader cannot even read the document without a password. You can create electronic forms for collecting data, and you can create document consistency by embedding the fonts used in the PDF document. Most importantly, PDF is portable, working on most platforms and in most web browsers.

LibreOffice allows you to export most documents as PDF, including text documents, spreadsheets, drawings, and presentations. There are a lot of options for the exporting of LibreOffice documents to PDF – today is an overview of these options. In later articles, we may look at more specific applications and uses.

PDF EXPORT

You can export a document as a PDF using the last selected options through the Export Directly as PDF button on the default toolbar. But, in order to change the options before saving the document, it is much better to use the File > Export to PDF menu option. This displays the PDF Options dialog.The dialog gives you six tabs with all the options for exporting your document as a PDF.

GENERAL TAB

The General tab gives you most of the common options.

The Range options allow you to specify what content is included in the PDF. You have options for All, Pages, or Selection. All will export the entire document into the PDF, while Pages allows you to select what pages are exported. You can enter a range of pages (1-6), individual pages separated by a semicolon (3;6;8), or a combination of ranges and pages (1-6;3;10-12;40;52). Selection will export only the currently selected contents of the document.

The Images options tell LibreOffice how you want it to handle the image quality. You can chose the Lossless compression option, but only if you have a good reason (eg, your document is a photo art journal). Lossless compression will greatly increase the file size. JPEG compression is a better choice, and a quality of 90% works for most photo images. The image resolution will depend on the end media for your PDF. If you are designing for online screen viewing a DPI of 75 or 150 is good. However, if there are plans for printing, a DPI of 300 or greater is better. Keep in mind that a higher DPI means a bigger file size.

The Watermark option is simple. Checking this option will create a transparent overlay on each page of the text in the text box. Use it to indicate a draft or sample.

The General options relate to the overall structure of the PDF.
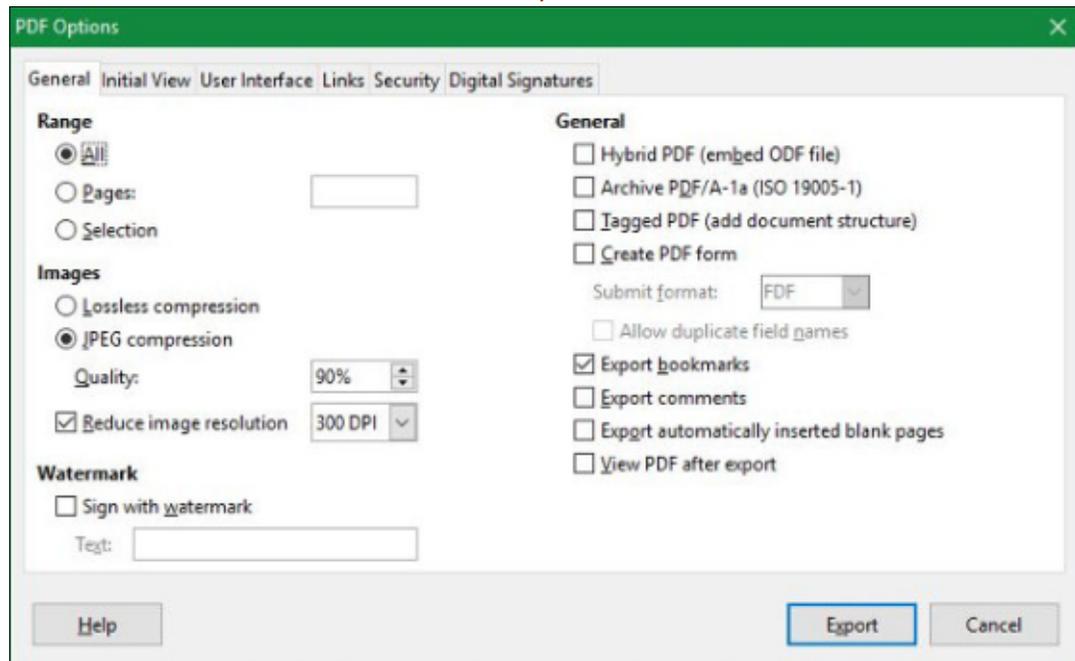
The Hybrid PDF option embeds the Open Document Format (ODT, ODS, ODP, etc) into the PDF document. This allows you to directly open and edit the PDF document in LibreOffice. After making changes, you can save it as a LibreOffice document or export it back to a PDF. Selecting this option disables the Range options since it will embed the entire document.

The Archive PDF / A-1a option embeds all the fonts used in the document in accordance with ISO 19005-1. This is a good option for creating archival documents or for preserving the use of special fonts or layouts. This is helpful if you need to print from a computer that does not have the same font set as the one you created the document on.

The Tagged PDF option allows you to create a tagged PDF document. Tagged PDFs contain document structure information and can allow the document to reflow better on some screens. The embedded structure is also used by some screen readers. A full discussion of tagged PDFs is beyond the topic of this article, but keep in mind that all that

document structure information increases the size of your document.

The Create PDF form option allows you to create a PDF form that people can fill out on a computer. This type of document could help you to collect data for use in other places. The Submit Format allows you to chose how the form data is stored. There are four options:

PDF – the whole document with the information filled in is saved as a PDF.

• FDF (Forms Data Format) – only the data for the controls in the form are saved.
• HTML – form data is saved in HTML format.
• XML – form data is saved in XML format.

There is also a checkbox to allow for duplicate file names in the forms controls.

The Export bookmarks option will create bookmarks for table of contents and outline paragraphs. If you are curious about the outline paragraphs, you change their setting at Tools > Outline Numbering. You can also export LibreOffice comments as PDF

notes in the document, as well as exporting automatically inserted blank pages. Finally, View PDF after export will open the newly created PDF after it is exported. This will allow to you see how the finished document looks.

INITIAL VIEW TAB

The Initial View tab lets you set how the document will display when it opens.

The Panes options allow you to select which reader panes will open when you open the document. You have the options to open the thumbnails and page,

bookmarks and page, or just the page itself. You can even set the document to open on a page other than page 1 by using the Open-on-page setting.

The Magnification options let you control the magnification of the document when it opens. Default just uses the default magnification setting of the reader, while other settings allow for whole page (Fit in window), page width, or zoom to fit the text and graphics in the window (Fit visible). You can also manually define a custom Zoom factor.

The Page Layout option
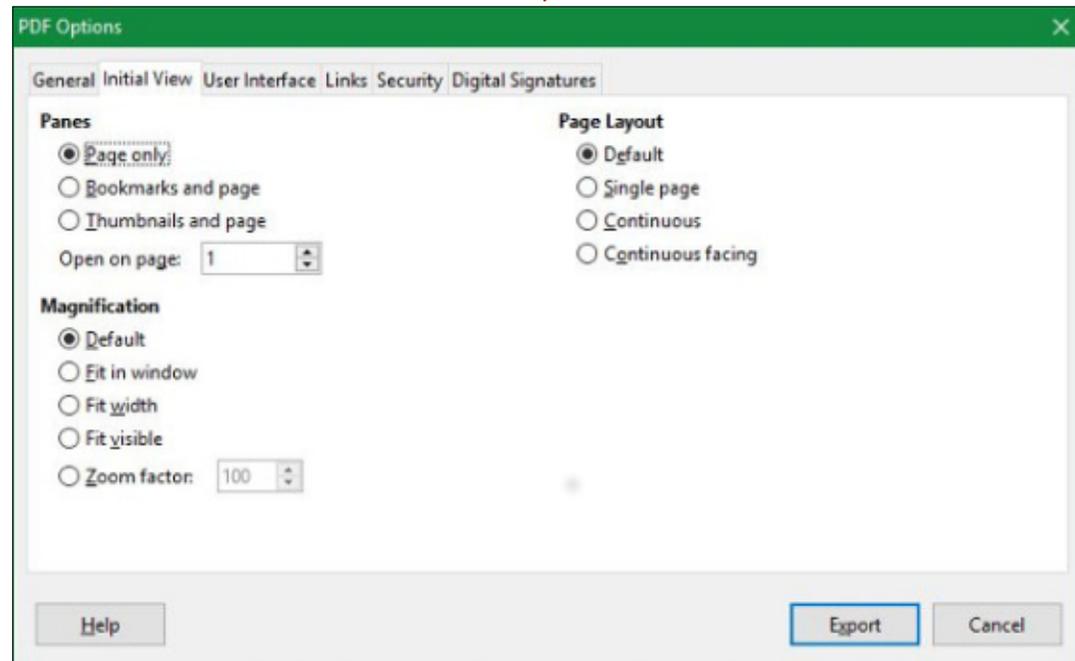
determines how the pages will display. Again Default just uses the reader's default settings; however, you can chose to have it display just one page at a time. When you scroll to the end of a page, it will jump to the next page. If you chose instead to select the Continuous option, when you reach the bottom of one page, the top of the next page will start scrolling as though the pages were fixed together. The Continuous Facing works the same way as continuous, but displays two columns of pages like an open book.

USER INTERFACE TAB

The User Interface tab controls the options for the way the actual window responds when the document is opened.

The Window Options control how the window will respond to the opened document. You can have it fit to the size of the first page, center the window on the screen, or open the window in fullscreen mode. You can also chose to display the document title in the title bar.

The Transitions option relates only to the export of a presentation to PDF. If you select the option, the LibreOffice page transitions are exported into the PDF document.

The User Interface options control whether to hide the menus, toolbar, and reader's control tools. You may chose to hide some or all of these depending on the way you want the document used. Keep in mind that the user can reverse all these options.

The Bookmark option allows you to control whether all or just some of the bookmark levels are exported to the document. You can select to export all or specify the level to which to export the bookmarks.

LINKS TAB

The Links tab sets how internal and external links are handled within the document. All of these options assume the reader is capable of handling the different options.

The General options control how links are referenced. Exporting the bookmarks as named destinations allows other documents to directly reference the bookmark. When you convert document references to PDF

targets, the PDF will reference a PDF document of the same name as the referenced document. This setting assumes you will convert all referenced documents to PDFs. If you want to move a document with external links to other computers, you can export URLs relative to the document; otherwise, they are exported as absolute links, requiring you to recreate the entire folder and file structure on the other computer.

With the Cross Document Links options, you control what program is used to open any links to documents. The Default option will use the operating system's default program for opening the linked document, but you can specify that the document is opened with the current reader, or with the operating system's default Internet browser. Whatever you

select, you have to assume that the selected program will open the file-type referenced. So, if you have a mix of document types, your best option is Default.

SECURITY TAB

You set what the reader can do with the document on the Security tab.

The Password button lets you set two different passwords, one for opening and the other for permissions. To set either of the passwords, enter the password in the appropriate text box, and repeat in the second box to confirm. Leave the text boxes blank to not create a password for

that feature.

If you entered and confirmed a password for permissions, the Print, Changes, and Contents settings are activated. The printing options indicate whether the reader is allowed to print the document without entering the password. The Changes section
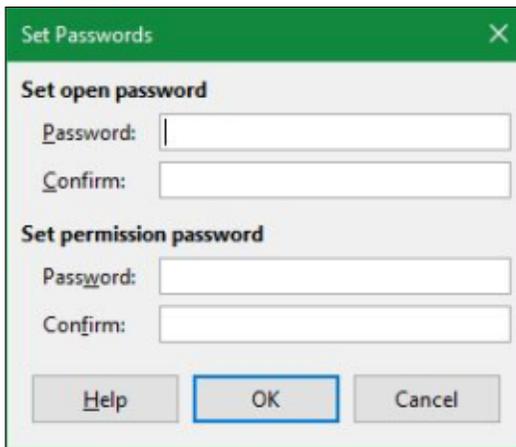
controls what changes are allowed without having to enter the password. The Contents settings control whether the reader can copy the contents of the document, or access the accessibility tools, without the password.

DIGITAL SIGNATURES TAB

The Digital Signatures tab lets you sign the document with a certificate. Digital signatures is a topic beyond the scope of this article, but know that you can add a digital signature when needed. The tab provides text boxes for the password and other information related to the certificate.

LibreOffice gives you many options for exporting your

document to PDF. We have covered, in a passing overview, the options available. PDF is a good way to send a document to others without making it easy for them to edit the document. You never know when you might need it, as you could get a request for a document in PDF format.

Elmer Perry's history of working, and programming, computers involves an Apple][E, adding some Amiga, a generous helping of DOS and Windows, a dash of Unix, and blend well with Linux and Ubuntu. He blogs at
http://eeperry.wordpress.com
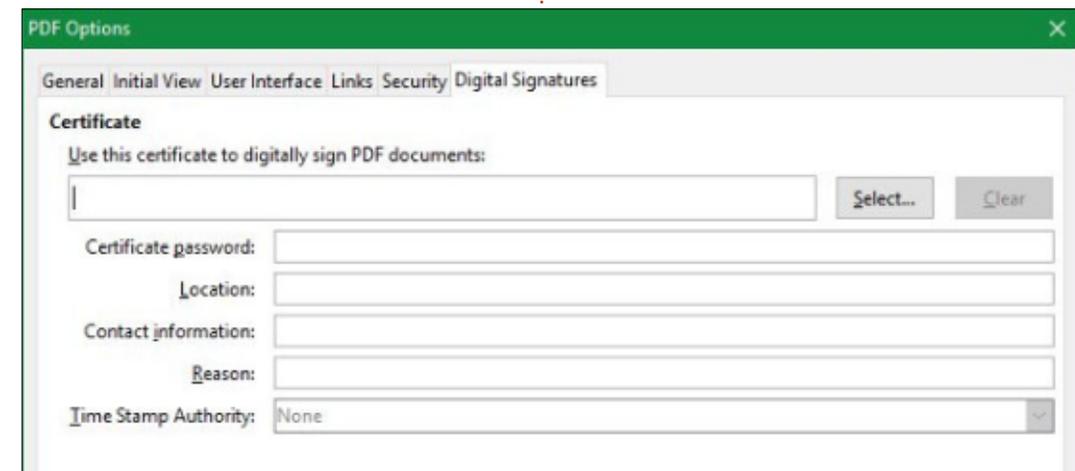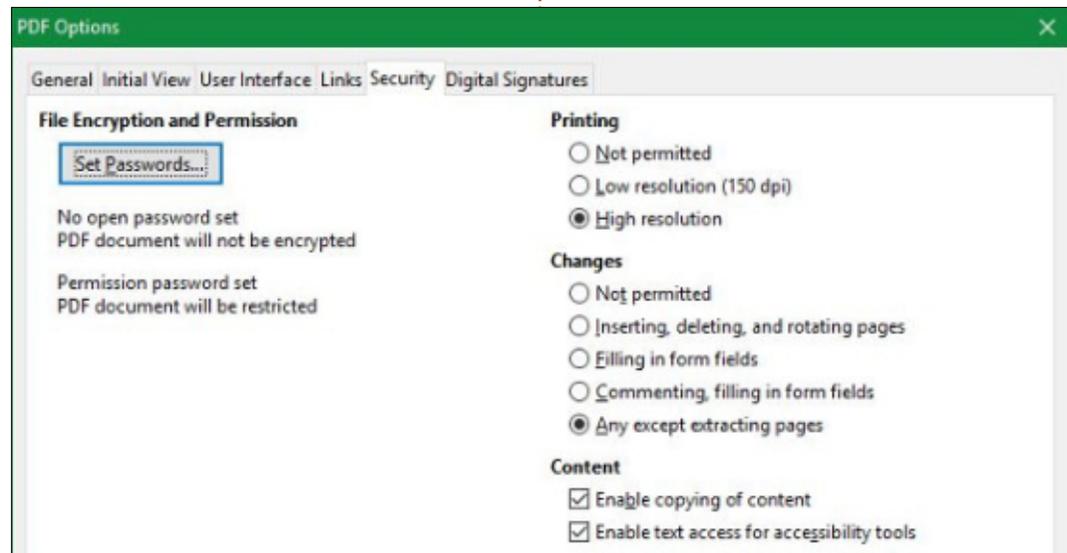
In the early days of computers, a company called Digital Equipment Corporation (DEC, first bought by Compaq, today part of Hewlett-Packard) created their 32-bit VAX (Virtual Address eXtention) computer as an upgrade from the 16-bit PDP/11 (Programmable Data Processor) computer. It uses openVMS as its operating system. In the steel-making company where I work, a large number of these computers were used to control the manufacturing process. We use (VAX-) Pascal as the standard programming language, and a home-brew computer interconnection program called HDN.

We are not the only manufacturing company that used these computers. There are thousands of VAX's sold all over the world. Because a VAX/VMS computer is so reliable, there are today, after more than 25 years, still a large number of them in use, including some in the company where I work. But after more than 25 years, the number of people knowing their way around in VMS is quickly diminishing, and it is getting harder to find replacement parts for failing hardware. The hardware could be replaced with emulators like Charon-VAX (although, I have bad experiences with frequent, but random, errors on Charon-VAX, I will explain these in one of the following articles), but expert programmers cannot be emulated. So, in the end, even these reliable computers will have to be replaced. But replacing these computers will take a lot of time and money, as the functionality must be migrated to another operating system.

WINDOWS?

Because most people are familiar only with Windows, this would be the logical choice. But the migration from VAX/VMS to Windows is time-consuming, expensive and complex, due to the different way the operating system works, and despite the fact that Windows NT is based, loosely, on the VMS predecessor, RSX, as used on the PDP/11. This complexity increases the chance of disruption of the manufacturing

process during the migration, which will cost even more money, not to mention the damage to the reputation if you fail to deliver in time, or at a lower quality than the customer is used to. Also the reliability of Windows is questionable: most programs delivered with the operating system are an integrated part of it, which might lead to a complete system breakdown if just one component fails, and viruses are a problem in itself. Protection against them takes a huge part of the systems resources, and, in our case, on one occasion, was even itself the cause of a total system breakdown. Mandatory updates of the operating system to patch security leaks require a frequent reboot of the computer, causing a loss of production time. And finally, some experts are quietly admitting that they are slowly losing the battle against the flood of new viruses....

WHAT ABOUT THE DATABASE?

contents ^

HOWTO - MIGRATE FROM VAX/VMS

Besides the different way programs are written for Windows, there is another problem: DEC created on their VAX/VMS computers another type of database compared to the relational databases used today, a network database named DBMS32 (DataBase Management System 32-bit). In this case, the word 'network' does not refer to a LAN or the Internet, but to the internal organization of the data. The different types of data are not linked to each other through a relation, but by a double-linked list. Finding the first/next/last member of a set is lightning fast, because you only have to follow the link – instead of reading all records in the database to see if the relation is satisfied. When you migrate a VAX/VMS system to Windows, you also have to migrate from network databases (if you are using it) to relational databases.

LINUX!

As I was thinking about an alternative way to migrate, it appeared to me that VAX-Pascal is largely compatible with Free Pascal. And the way Linux works is largely compatible with VAX/VMS.

So I decided to try to convert our programs to Lazarus/Free Pascal, but found that there is no replacement for DBMS32. So.... I created one. It's written in Lazarus/Free Pascal, and includes a GUI replacement for DBQ – the database client interface program used to read or enter data. Not entirely up to spec yet, but that will improve over time. I replaced the interconnection program HDN by a set of programs: one to send and one to receive the data, operating system independent, and with the data in readable form, formatted in XML-style, while using folders as send and receive buffers. To be used by our applications, I created an API equal to that of HDN, so the applications remain untouched. This causes less risk of failure, because they just needed to be linked to another library.

IT IS NOT GOING TO BE EASY...

The way I state this might suggest that migrating a VAX/VMS system to Linux (in my case Linux Mint 17) is a walk in the park. This is, unfortunately, not true. There are third party programs used on VMS systems which have no Linux replacements. You would have to rewrite those programs based on their functional/technical description, or find another way to deal with the functions they perform. There are libraries offered by DEC included in VMS with no counterpart in Linux, such as FDMS (Forms Display Management System). And then there are technical functions used in VMS with no apparent replacement in Linux, such as eventflags and logicals. In the following articles, I will go more in depth to describe how I replace these, and other functionality such as mailboxes (IPC), and how to deal with Asynchronous System Traps, DCL and file version numbers.

IF YOU NEED HELP...

Because my company is not the only one that wants to migrate away from VAX/VMS, I am willing to provide DBMS32 and the other replacements as open source under the GPL license to anyone who needs it. And I am offering to assist in the conversion of your VAX/VMS programs. This will be magnitudes cheaper than a complete re-engineering and conversion to Windows and there is a much smaller chance of disruption of the manufacturing process during the migration, as the conversion is almost 1-on-1.

I think the advantages of a network database would be interesting for new projects as well. If there are enough people who would like to know more about using network databases and their (dis)advantages, I will write some articles on how a network database is organized and how it can be used in comparison to a relational database.

NEXT MONTH

In the next article, I will explain what eventflags are, what they are used for, and why they are so important to dedicate an article to them.

After keeping VAX/VMS systems running for 30 years, **Theo** needed a new challenge and started from scratch with Linux to re-do every mistake he made all over again. You can email Theo at: info@theovanoosten.nl

GnuCash is in the repositories and easy to install. Once installed, if you want to download transactions posted to your bank account, there are a few relatively easy steps to take.

Once you open GnuCash, click on File>New File, or use Ctrl+N to open the New Account Hierarchy Setup window.

It will help you set up a set of GnuCash Accounts for your assets, liabilities and different types of income and expenses you may have.

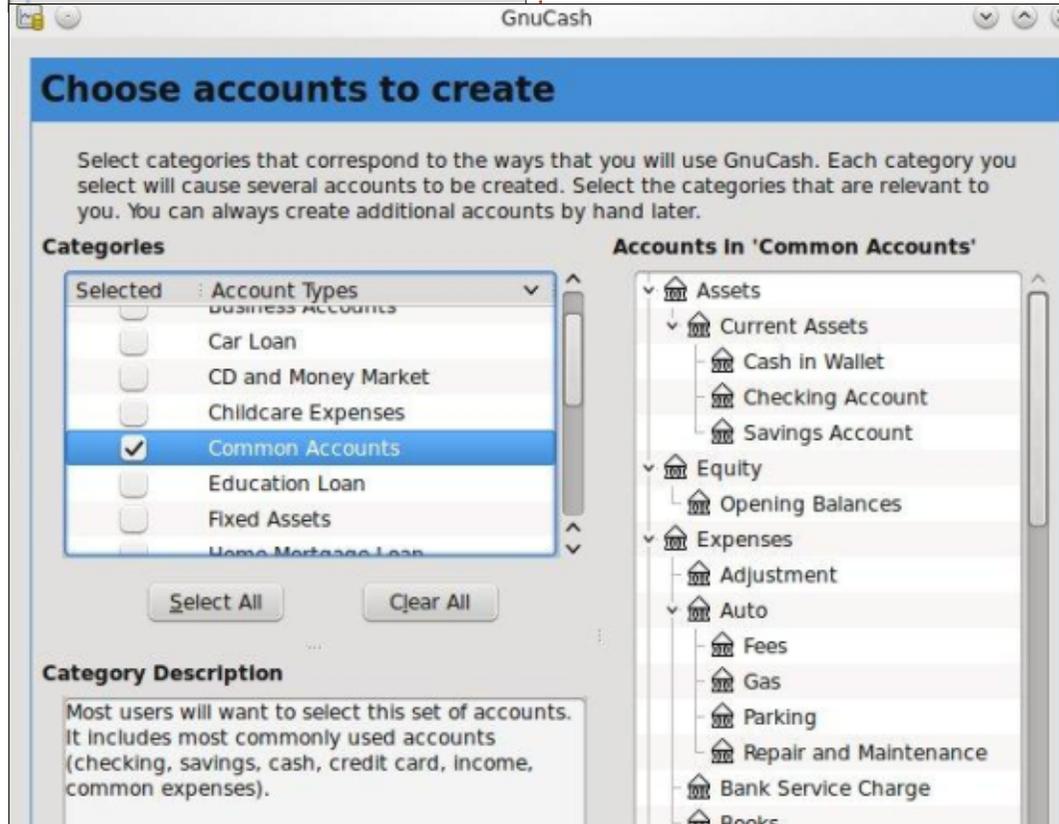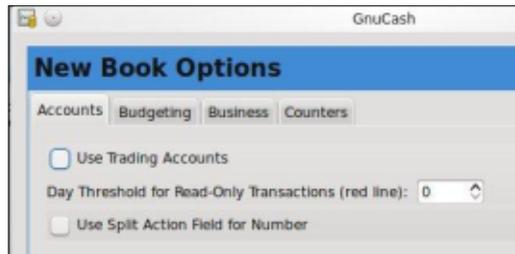On this screen, you can choose Cancel or Forward to the next screen, Choose Currency.

The Choose Currency is self-explanatory, as you can choose the currency of your area.

Once you have chosen your currency, you have the option to go Back, Forward or Cancel.

Going Forward takes you to the New Book Options.

The Accounts, Budgeting, Business and Counters tabs I believe are more Business orientated. The Budgeting tab is greyed out so there are no options on that tab. So, for my personal finances, I did not choose any of the options and went Forward to the next screen, Choose accounts to create.

As you can see, Common Accounts is selected and the Category Description states that most users will want to use this option. From here, click on Forward to Setup selected accounts.
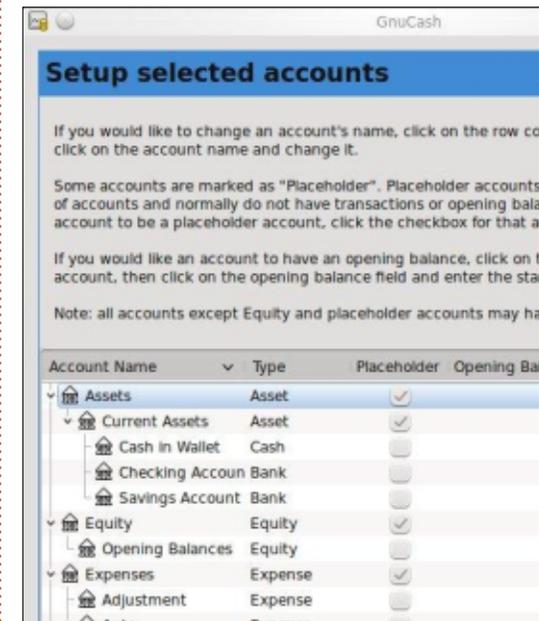
This is where you set up your accounts. When you click on an account and highlight it, you then double-click on Account Name to specify the name you wish to assign to the account: ie., My Banking Account. With the account highlighted, you can also double-

click on the Opening Balance (refer to your latest bank statements for these figures), and you will be able to start with your Opening Balance. If you fail to enter an Opening Balance, or Account Name, you have the option of entering them when you open the the register screen after setting everything up.

Clicking on Forward brings you to the Finish Account Setup screen. Here, once again you can go Back, Apply or Cancel the actions. Clicking on the Apply option brings you to the Save As window.

Here you create a folder for your files and give it your preferred name.

After saving your account, your banking accounts are listed under Assets.


At this point, if you do not wish to download your online banking file, you can just use your GnuCash as a regular check register.

Next, you can set up your online banking by clicking on Tools, online banking setup.

Here you will need the following: the bank code of your bank, the user ID that identifies you to your bank, and the Internet address of your bank's online banking server. You must contact your bank for this information. When you have this information click on Forward
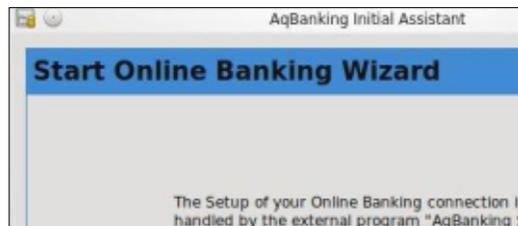
Clicking on Forward brings you to the Start AqBanking Initial Assistant.
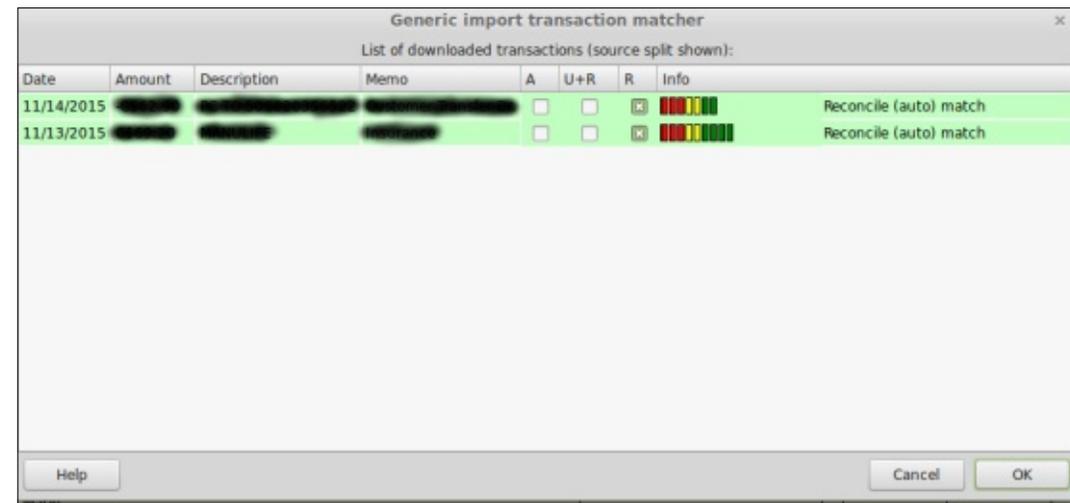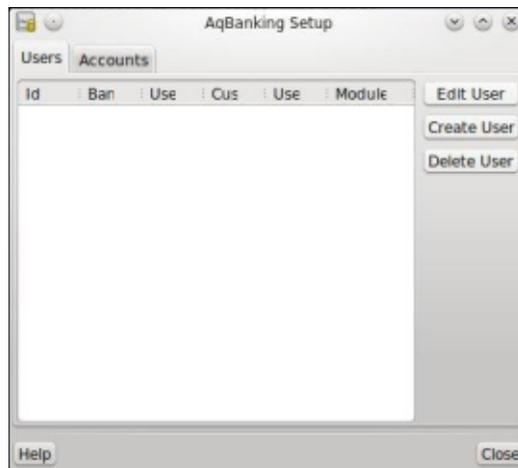
After clicking on Start AqBanking Wizard, your next screen allows you to Create User and Accounts in order to download banking data for GnuCash.

I will not actually create another bank account as I have everything already set up with my banks.

Once this is finished, go to your personal banking institution, find where you can download your data for your account, and choose Quicken.

After downloading your file, click on File>Import OFX/OFX... and navigate to the downloaded Quicken file.

Highlight the downloaded file and press enter. This will bring up the Generic Import transaction matcher window, which allows you to reconcile your transactions with three options: A = imports transactions you have not entered in your register; U+R allows you to update and reconcile the transaction, and R reconciles the transactions you have entered in your register. Once you have selected your preferences, click OK. You will then be brought back to your account register and see your imported transactions have been updated with a "c".

I hope this will help with initial setup of your accounts.

Able2Extract 10

Create, Convert and Edit PDF

- ✓ Convert PDFs to Microsoft Word, Excel, PowerPoint, CSV, AutoCad, Text, Images, OpenOffice etc.

- ✓ Convert any file format to Excel.

- ✓ Edit PDF text right on the spot.

- ✓ Reassemble, merge and split PDFs.

- ✓ Protect and secure your PDFs.

Works with:

Ubuntu   Fedora

Able2Extract 10
Create, Convert and Edit PDF

Convert PDF to Excel, Word, PowerPoint and more...

Compatible with:

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If you've read the previous few articles, you should now have an idea of how to use Live Path Effects, and just how capable they can be. Rather than go through every remaining effect in detail, I'm going to spend the next couple of articles presenting a whistle-stop tour of those that are present in version 0.48. These are all also in 0.91, and their respective interfaces are the same between the two versions, so these examples should apply to either version. In each example, I'll present the original skeleton path in red with the results of the applied LPE in black.

CONSTRUCT GRID
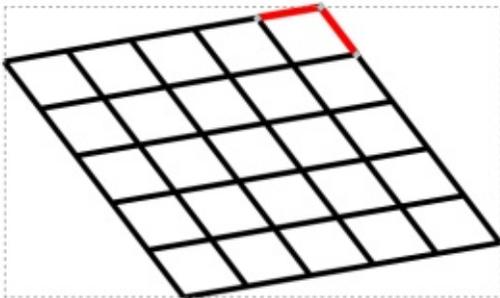
A simple LPE to start with, the Construct Grid effect does exactly as its name suggests – it constructs grids. It uses the first three nodes of the skeleton path to define two sides of a parallelogram, extending the shape to form a grid of cells based on the Size X and Size Y values in the UI.

The "live-ness" of this effect can make it useful if you want to drag the nodes around to produce the correct perspective by eye, rather than by creating a grid with numeric angles.

HATCHES (ROUGH)

This is a peculiar effect. Its main use is to simulate hand-drawn scribbles as a fill inside your (usually closed) path, but given the rough nature of the results – it even says "rough" in the LPE name – I don't think it really needs the huge number of fine-grained controls it presents. For most people, the key to using this LPE is to just use the on-canvas controls and a few of the main UI elements, without getting too bogged down in the many other options.

When you apply this effect to a shape, Inkscape draws one or more sine waves that try to fill the available area. The waves can be modulated in both frequency and amplitude by the parameters you set in the UI, and their angle, base frequency, and the amount of bend applied to them, are set by on-canvas handles.

To get a feel for the effect, draw a closed path, then add the LPE. You'll see your path replaced by a squiggly line that approximates the original shape. Now switch to the Node tool (F2), and towards the middle of your shape you should see four handles – two circular and two diamond-shaped. If you see fewer than four, then it's simply because some are positioned on top of others. Drag them around until all four are visible.

The four handles represent the end nodes of a pair of vectors (which, confusingly, aren't actually drawn as lines), and are used to set the main parameters for the effect. In each case the circular node is the reference point – drag that one, and the corresponding diamond will move in sync. This can be used to move the nodes to a clearer part of the canvas, or to some specific reference point in your drawing. Moving one of the diamonds adjusts both the angle and frequency of the sine waves used to fill your shape. The other diamond sets the amount of bend that is applied. It has an effect only if the Bend Hatches checkbox is ticked in the LPE dialog, so, if you don't want the additional curvature applied to your sine waves, simply uncheck that control.
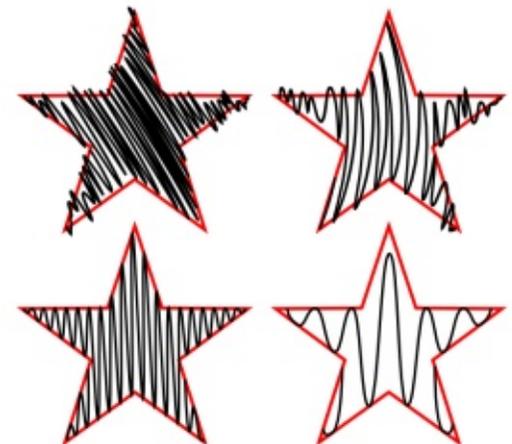
Of the remaining controls in the dialog, it's probably the top two that have most effect: Frequency Randomness is used to adjust the amount of variation that is applied to the base frequency, whilst Growth causes the frequency to increase from left to right. Set both values to zero if you want to use just the base frequency that you've set with the on-canvas handles.

With these basic controls, it's possible to produce a variety of effects, running from the appearance of a hand-drawn scribble, to a simple shaped sine wave:

Many of the settings in the dialog have pictures of dice next to them. Despite their appearance, they don't actually set the fields to random values. Rather, these are buttons which change the seed value in the random number generator that's used to produce the corresponding value in the hatching algorithm. Their only real use is to ensure that one copy of a shape using this LPE has a different hatching pattern to another copy – if you need to produce many similar shapes then clicking a few of the dice will

ensure that they all look slightly different from one another.

The final checkbox, "Generate thick/thin path", is worthy of a mention too. With this enabled, two sets of paths are created that move in and out of sync with each other on each half-cycle of the underlying sine wave. The specifics of the synchronisation between them are set by the last few fields in the UI. These two sets of paths are actually joined at each end, forming a single path that can be filled to give a calligraphic effect to the hatching:

INTERPOLATE SUB-PATHS

This effect requires that your skeleton path is made up of two

sub-paths (if it has more than two, only the first and last ones are used by the LPE). Typically, sub-paths are created by combining multiple paths – through Boolean operations such as removing one path from another object that completely encloses it, or by breaking a single path into smaller sections by hand using the Node tool's Delete Segment or Break Path buttons. Consider this simple example of one star inside another, drawn separately, then combined using Path > Combine (CTRL-K). When the LPE is applied, a number of additional sub-paths are created, interpolating between the two sub-paths of the skeleton:


The total number of sub-paths in the final result is set using the Steps parameter. Increasing this, and turning the inner sub-path a little, demonstrates the sort of

effects that you can easily create with this LPE:
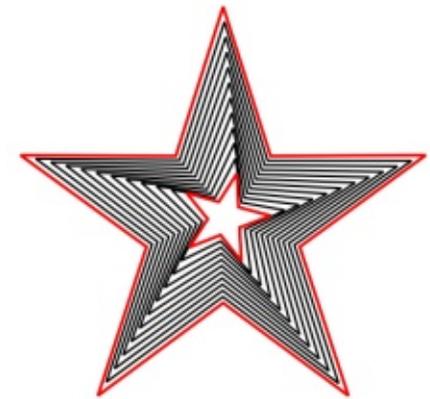
The Trajectory control in the LPE dialog shows the familiar group of four controls for setting a path. These allow you to specify a path along which the rendered sub-paths will be spaced, allowing for more than simple linear projections.
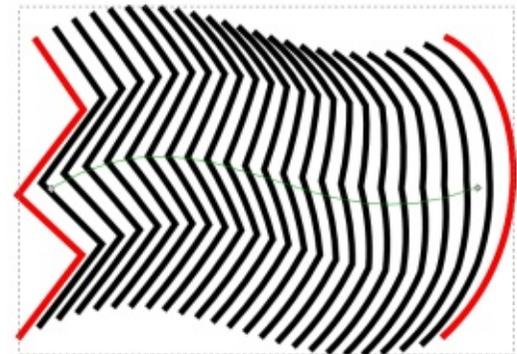
With the Equidistant Spacing checkbox ticked, the sub-paths will be placed evenly along the trajectory path. Un-check that, however, and their spacing will be determined by any additional nodes in the path. The nodes split the path into segments, then the total number of sub-paths is distributed between the segments. For example, a trajectory with three nodes will result in two segments, each holding half the rendered sub-paths. Moving the middle node, therefore, results in the spacing of the paths being adjusted – one half bunched together and the other half spread out.
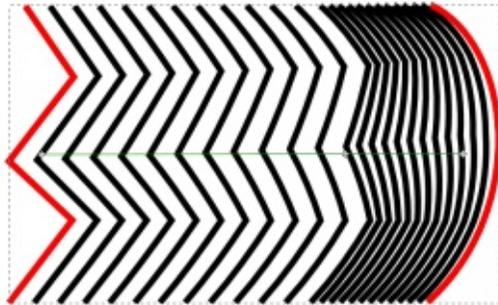
By creating a trajectory with the same number of nodes as the Steps value for the LPE, each sub-path is tied to a single node, letting you accurately position

them simply by moving the nodes around. This example uses Steps=5 together with a trajectory path that has five nodes, to demonstrate this possibility:
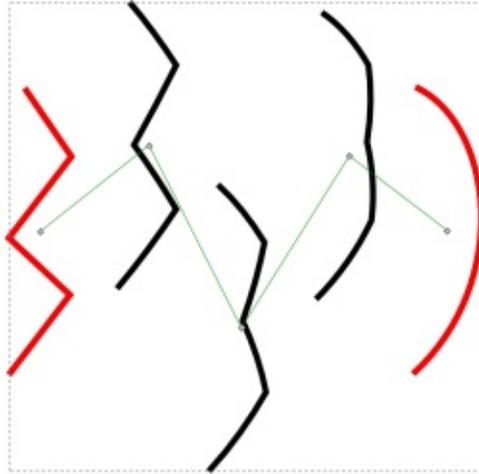
Next time we'll look at the remaining effects that are available in 0.48: Pattern along path, Ruler, Stitch sub-paths, and VonKoch.

Mark uses Inkscape to create three webcomics, 'The Greys', 'Monsters, Inked' and 'Elvie', which can all be found at
http://www.peppertop.com/

Valentine's Day is coming, and I can't think of a better excuse to show a less serious side of LaTeX – while at the same time showing some of the fancy font formatting that we can do.

The advantage of creating your own card is that you can avoid going to the store and reading all kinds of cards that are a bit too mushy for your taste, and resorting to picking the best one from a bad lot that just is ¨not you¨. He/she would appreciate receiving something that you made the effort of making yourself. The card can also be used to create a card for any event or holiday.

Creating any kind of card is made easy with this template that makes use of the gcard.sty, which would be installed on your computer as part of the texlive-latex-extra file.

The preamble contains these commands to make things happen:

```
\usepackage{gcard}
\usepackage{calligra}
\usepackage{graphicx}
```

```
\usepackage{color}
```

The package gcard is what formats the page, calligra gives us the handwriting font, graphicx gives us pictures, and color lets us change the colour of the font. You may notice the two spellings of the word colour. In LaTeX we have to do as the Americans do and use their spelling of color for colour. I refuse to capitulate in the rest of the column.

Within the document, we need the {\calligra } command when we want the handwriting font to appear. To change the font colour to red and change the size of the font:

```
{\LARGE \color{red} * }
```

Here is something that can trip you up and causes errors.

See the asterisk in the the code above? That is where your text goes, and it can be many paragraphs if you like. But that last " } " can get lost or deleted if you are not careful, especially when you add more text formatting code

```
\\documentclass[12 pt, letterpaper, portrait]{article}
\usepackage{gcard}%calls for the package to make the card
\usepackage{calligra} % added for handwriting font
\usepackage[T1]{fontenc}
\usepackage{graphicx}
\usepackage{color} %added for font color
\begin{document}
\begin{frontcover}
\begin{center}
\includegraphics{1.png}\\
{\LARGE \color{red} %temporary command to change font colour
{\calligra to a special person.}}
\end{center}
\end{frontcover}
\begin{insideleft}
 \end{insideleft}
\begin{insideright}
{\LARGE \color{red} %temporary command to change font colour
{\calligra Happy Valentine's Day!}}
\end{insideright}
\end{document}
```

like:

```
{\calligra Happy ...}
```

When we run it all together it looks like:

```
\LARGE \color{red}
{\calligra Happy ...}}
```

Notice the double }} at the end. If you forget to put those in, or one } gets deleted, your document will not compile properly.

My file for the Valentine's day card is shown above.

You will have four small pages on one side of the paper. You will have to fold it to make your card. Depending on font sizes and what kind of card you are making, you may have to adjust things with centering or no centering on the page.

That is how to make a greeting card in LaTeX.

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Richard Trotter
Geoteric

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I recently took up homebrewing and wondered how I could incorporate the Arduino. I think I can. I thought I'd use this article to show my thought process and planning before I even pick up an Arduino, or think about writing code.

THE BASIC IDEA

Ideally, I need to keep my fermentation vessel between 18-25°C. The spare room that I'm using is sitting at about 16°C, so I need to find a way to control the heat around the vessel. I can't put anything in the vessel as this may introduce contamination, or break the seal on the vessel. I'd also like some lighting to let me see what's happening inside the vessel since the vessel is semi-transparent. Any other info would be a boon.

OK, so I know what I roughly want. Let me look at the pros and cons of the various things.

VESSEL HEATING

This is the one thing I really need, so this is the priority. Initially I was looking to modify something that's readily available like a heated car seat, or a pet blanket. Mainly those as they're low power (around 12V), but after more reading I'd be as well sticking with what I have just now, a reptile heat mat that I can wrap around the vessel. I just need to find a way to control the heat mat.

TEMPERATURE READING

Like I mentioned earlier, I can't put anything in the vessel so I'm going to have to make do with a reading from the outside. I know I can accomplish this with the DHT temperature/humidity module that I've used before. I'll just have to make sure it's firmly touching the outside of the vessel but not too fixed as it will need to be removed before cleaning the vessel.

TEMPERATURE CONTROL

Now that I have those two nailed, I can try to figure out a way of controlling the heat mat. After a lot of research I think a relay switch is the best option. With this I can use the Arduino's 5V to trigger the switch to an on/off position. I've not used switches much, but the gist behind them is to put the live wire from the heat mat through the switch, which will break the circuit, then, when required, energise the switch with 5V to complete the circuit and the heat mat will come on.

Controlling the heat mat, I'll probably use the figures from the DHT module with code something like:

```
if temperature <19
        turn on heatmat
else if temperature is >22
        turn off heatmat
```

My thinking for the 19 and 22 is that the final temperature should be around 20°C to 21°C, but either way anything from 19-25°C is fine.

Another reason for the not-so-strict heating in my pseudo-code is that the heat mat will take about 20-30 seconds to reach full heat.

I'm not worried about this as it is never hotter than about 32°C, it will take a while to heat the liquid inside, and, conversely, it'll take quite a while for the liquid to cool down. Hence, while the heat mat may be on for a little while it should need switching on/off only every few hours, at least, so it's not like I'd be switching it on and off every few minutes. Well, that's the theory. We'll see how that pans out in the practical phase.

LOGGING

I still have a spare ESP WiFi module, so I can probably do like I did with my plant monitoring project where I send the data to ThingSpeak. I'll probably note the temperature and humidity over day and time. Of course, day and time may mean I need to use a real-time clock module. Unless ThingSpeak tags on the day/time. Not sure. Can't remember if they do.

I could also log the brightness of the room using an LDR, but the light level has no bearing on the

brew, so scratch that.

I'd like to have an alert system where I can get an SMS/email should the temperature go haywire. This is a possibility using ThingSpeak and Twilio, but is not something I've tinkered with before and will leave this to the end as it's not critical.

LIGHTING

Lighting is not critical, and will be manually controlled, so I'm not too worried about this. This will be a strip of 12V LED lighting with a transformer and a switch. No need for the Arduino to control the lighting. One major consideration for the lighting though is that it must be removable as the vessel has to be bleached sterile after use. I'll probably just attach the light strip(s) to the vessel with some tape or blu-tac.

ADDITIONS

I have a spare IP camera that doesn't seem to move up/down or left/right properly, so I might use it to view the fermenting vessel by putting it near the top rim to see in. My only query here is that if the

camera switches to night vision mode, will the IR lights reflect off the vessel and bleach the image making it useless? Not sure, but that's something to test.

A further addition could be an LCD screen. If I put the screen near the top of the vessel, and within range of the camera view, I could monitor the temperature remotely.

As a quick visual-at-a-glance aid, I may add some LEDs to show if the temperature is within a certain range. Maybe between 20-22 could be a green LED with 25+ being red. Maybe 19 or less is a yellow LED.

CONCLUSION

The basic idea of controlling the temperature of the liquid with a heat mat is definitely possible. Same with the logging. Shouldn't be a problem.

The lighting (to see inside) isn't a necessity and not Arduino controlled, so it'll be left until last probably. Same with the IP camera. Nice, but not a necessity, and not Arduino controlled.

I'll more than likely include the LCD screen as it's a nice visual guide to the reading from the DHT and I can compare that against the thermometer that's stuck to the side of the vessel.

NEXT MONTH: The project begins with the LCD screen, DHT and WiFi modules.

Ronnie is the founder and (still!) editor of Full Circle. He's a part-time arts and crafts sort of guy, and now an Arduino tinkerer.

After seeing the varying aspects of the Chrome OS, are there other Linux distros running off the cloud? Perhaps there could be an open source solution to the closed OS by Google.
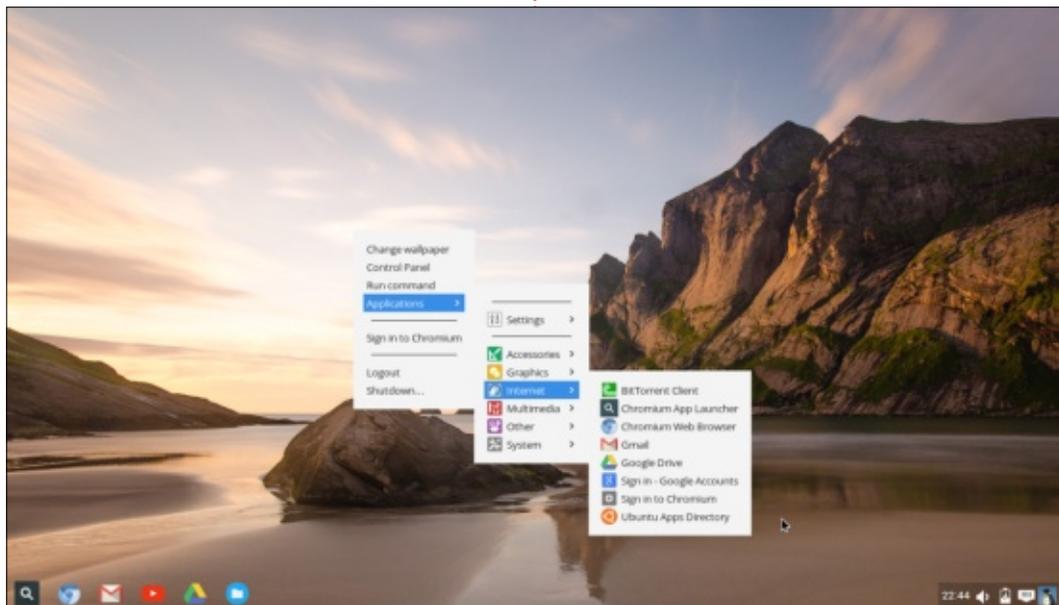
There are four Linux Distros that come to mind: Chromixium, Papyros, Solus, and Apricity.

CHROMIXIUM:

Chromixium is a popular one based off Ubuntu 14.04. Essentially, there has to be more than Chromixium. Chromixium was previously reviewed in Full Circle Magazine. It is gaining steam as a full distro, while staying true to the Chrome OS formula. It uses the Ubuntu Software Center. Chromixium picks up where the Chrome OS drops off. My only criticism is that Chromixium is too Chrome OS-like in nature.

Chromixium is a distro that has some solid groundwork. It deploys Grive for the Google Drive access. If you wanted a good feel of a Chromebook, then distro hop to Chromixium for a try. The Chromixium DE mirrors the first screenshots from the first Chrome Cult. You can see the shelf and profile. Chromixum uses Openbox and a few tweaks to get the Chrome OS feel.

PAPYROS:

Then there is Papyros. This distro had varying names since its inception. However Papyros is based off Arch Linux and it has yet to reach Alpha testing. It will be done soon per the website. It utilizes Google's Material Design guidelines. The DE has roots in KDE and Gnome.

The purpose to Papyros is simple but beautiful.

"Our vision for Papyros is building a Linux operating system that is fun and easy to use for the average user. We're doing this by building an operating system that gets out of the user's way, integrates with cloud services and web technologies, and converges across devices and form factors.
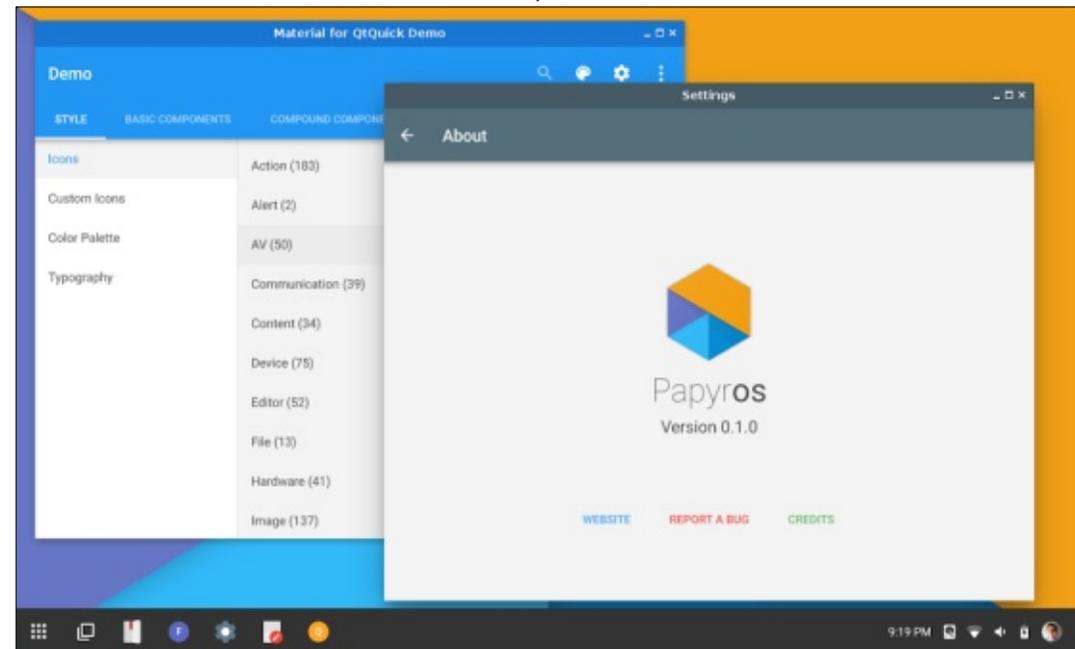
Their current work in progress is:
• A rolling release architecture with atomic upgrades and rollbacks.
• Integration with web apps such as Gmail, Inbox, and Evernote.
• A simple and easy-to-use desktop environment.
• A cross-platform app development framework based on QtQuick.
• A file manager and settings app for the OS.

This distro could use some backers to help support it. They are using Bountysource Salt as a crowdfunder. Their future goals: intelligent notifications, user account restrictions, application bundles, sandboxing, and, if possible, convergence.

The developer is running a Google+ account and infrequent blog. The last activity about the distro is from September 2015. There is no Papyros Installer. You can run a Papyros Shell if you have Arch Linux already downloaded. I truly hope this distro can get the momentum to be successful like Chromixium.

Papyros Linux could possibly use the Arch User Repos (AUR). The AUR is a strong PPA listing for Arch Linux. The AUR has Dropbox, ownCloud, Grive, and other cloud repositories. This would allow Papyros to have access to many cloud services utilized by the Chromebook Ecosphere, while still being open source. I am hoping to do a better review of Papyros when they develop their installer. I prefer not to install Arch Linux just to try out a new and developing OS.
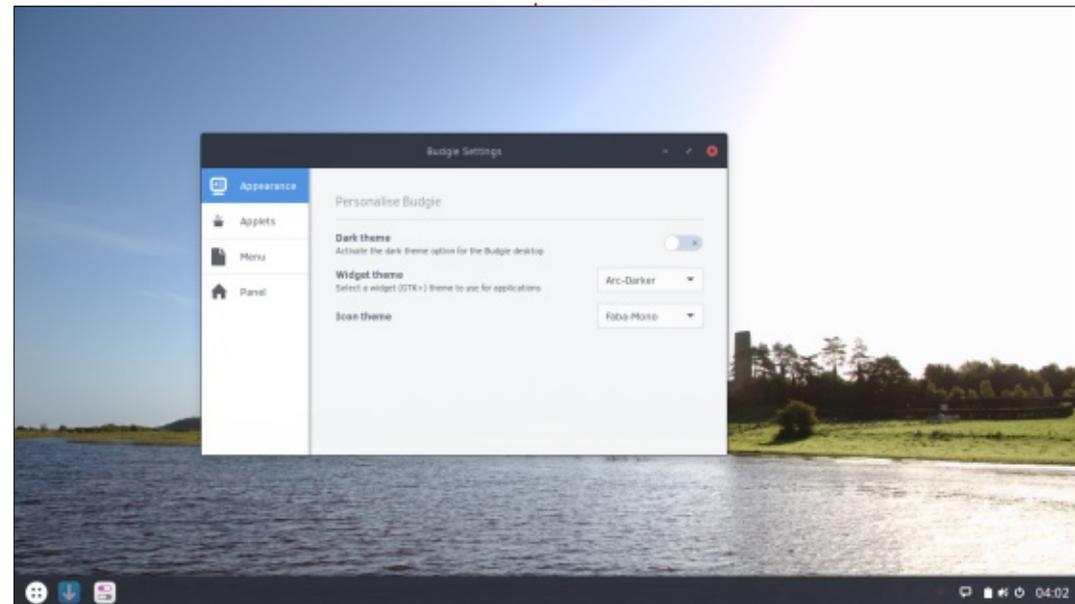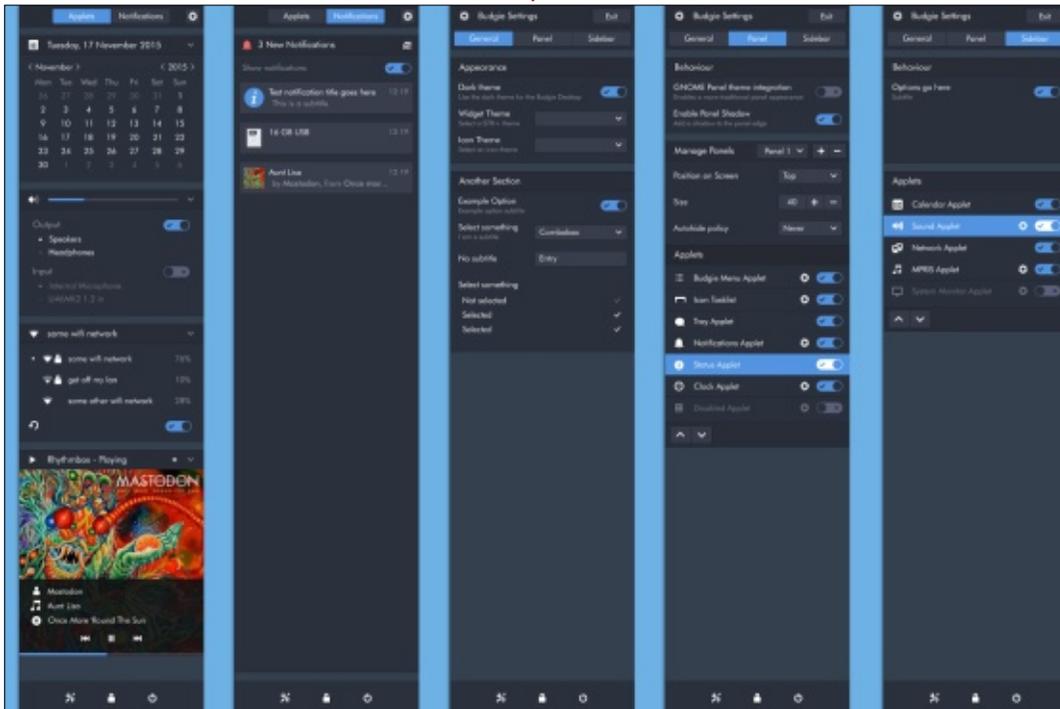
SOLUS:

Solus is not based on any previous work; it is built from the ground up. It is the most mature and established distro for minimal design. The DE layout is similar to previously mentioned OSes. It has its own DE called Budgie. Solus uses the Gnome Software Center, it favors the Gnome ecosphere. The PPA manager is eopkg. The Solus Project has an active forum and blog. Budgie can be installed on Linux Mint and Ubuntu. It uses an applet called Raven (below left).

Raven is a notification and customization center. It does the following per Solus Project:
• Calendar access and Media Center Controls.
• Manage application and system notifications.
• Customize the Budgie DE (below).
• Quick access to power options

and system settings.

Solus runs well on my older HP. The OS feels minimalist while still offering the functionality of a full DE. Solus has an established forum that supports new users very well. The only issue with Solus is the Gparted Partition Installer. I had to redo the install steps a couple of times to get Solus fully installed. However, this is a small complaint. The install was less than 30 minutes. Only a 64-bit architecture is offered at this time.

Solus just finished beta testing. I am thinking of running this OS for a while on my older HP at home. The main goals of Solus are below:
• Solus Operating System is completely free and open source. We leverage fantastic open source software to enrich the end-user experience
• We focus completely on the desktop, and believe users deserve a first-class desktop experience. No phablets here!
• We believe an operating system should get out of your way, and do its job as well as it possibly can when it is needed

Each release of Solus will be supported for 2 years. And there will be 4 updates each year for the OS.

APRICITY:

And now for Apricity. This is another Arch Linux derivative. It has a strong community too. The developers are based out of Chicago, IL, USA. It is currently in beta testing. I will review this distro next month.

SJ Webb is a Linux Hobbyist and Research Coordinator. He enjoys fishing, hot rodding, and spending time with his kids and wife. He thanks Mike Ferarri for his mentorship.

GUIDELINES

The single rule for an article is that **it must somehow be linked to Ubuntu or one of the many derivatives of Ubuntu (Kubuntu, Xubuntu, Lubuntu, etc).**

RULES

• There is no word limit for articles, but be advised that long articles may be split across several issues.

• For advice, please refer to the **Official Full Circle Style Guide**: http://url.fullcirclemagazine.org/75d471

• Write your article in whichever software you choose, I would recommend LibreOffice, but most importantly - **PLEASE SPELL AND GRAMMAR CHECK IT!**

• In your article, please indicate where you would like a particular image to be placed by indicating the image name in a new paragraph or by embedding the image in the ODT (Open Office) document.

• Images should be JPG, no wider than 800 pixels, and use low compression.

• Do <u>not</u> use tables or any type of **bold** or *italic* formatting.

If you are writing a review, please follow these guidelines :

When you are ready to submit your article please email it to: articles@fullcirclemagazine.org

TRANSLATIONS

If you would like to translate Full Circle into your native language please send an email to ronnie@fullcirclemagazine.org and we will either put you in touch with an existing team, or give you access to the raw text to translate from. With a completed PDF, you will be able to upload your file to the main Full Circle site.

REVIEWS

GAMES/APPLICATIONS
When reviewing games/applications please state clearly:

• title of the game
• who makes the game
• is it free, or a paid download?
• where to get it from (give download/homepage URL)
• is it Linux native, or did you use Wine?
• your marks out of five
• a summary with positive and negative points

HARDWARE
When reviewing hardware please state clearly:

• make and model of the hardware
• what category would you put this hardware into?
• any glitches that you may have had while using the hardware?
• easy to get the hardware working in Linux?
• did you have to use Windows drivers?
• marks out of five
• a summary with positive and negative points

You <u>don't</u> need to be an expert to write an article - write about the games, applications and hardware that you use every day.

With this part of the Fisher 1 build, we give it some sides. There are two sides and a back. The back, which comes later, is where we access the SD card slot and have the power jack. Again, you need to peel the protective covering from both sides of the two side panels. Endstops are little microswitches that your carriages will touch and signal that they've reached their end point. These microswitches are held in place with small cable ties. The two side panels are held in place by several screws.

CONNECTING RODS

This one (below left) is a bit of a boring job. You get two sheets of strips. You pop the strips out of the sheet in pairs. Again, you remove the protective covering from both sides of each rod, then screw the rods together. Then do it all five more times. You get six rods—each made up with a pair of strips screwed together.

The rods should be carefully pried apart at the edges and the steel ball on the sides of the carriages goes between the pair of strips on the rods.

EFFECTOR ASSEMBLY

The nozzle that'll heat up and melt the plastic filament sits inside the effector (below right). The effector is attached to the rods. Hopefully, now you can see how the nozzle will move, or be aimed. The carriages will, independently, go up/down with the effector dangling from the carriages on the rods.

The effector is a tricky contraption to build. It involves trying to tighten screws that are quite well hidden, so having angled screwdrivers, or Allen keys, would be helpful here. Took a bit of fiddling, but I managed it in the end with just straight screwdrivers and with Allen keys that I normally use on my bicycle.

Again, you'll need the callipers to check the total width of the sides with more steel balls
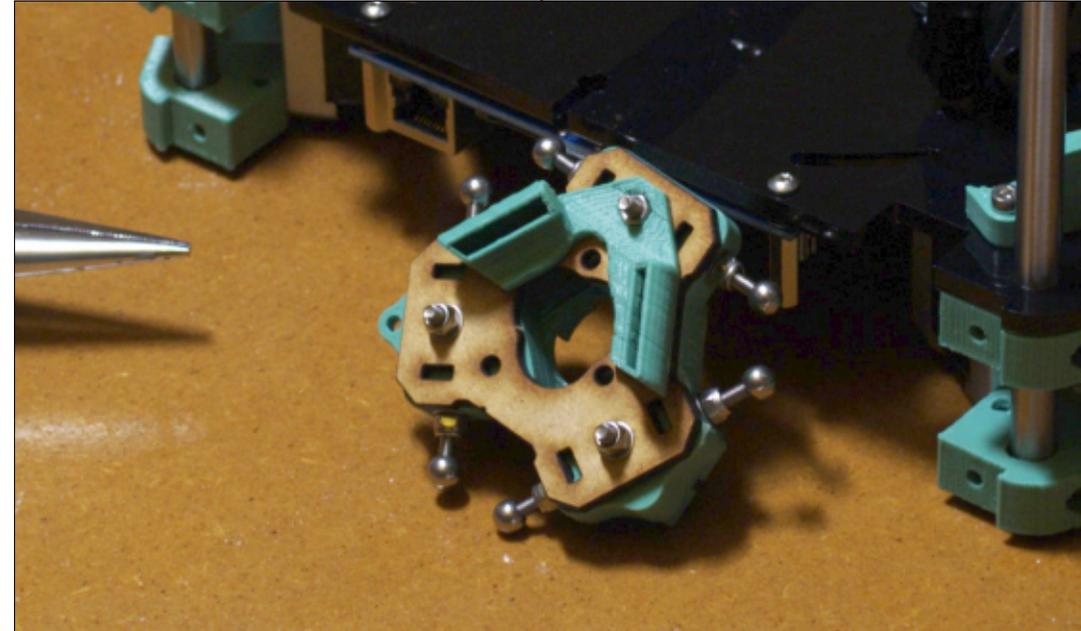
screwed in place. You might need a metal file for this to shorten the screws and bring the steel balls back a touch.

EXTRUDER ASSEMBLY

The extruder, as you might have guessed, extrudes your PLA plastic filament. It feeds the filament down a tube into the heated nozzle.

Yet again, more peeling of plastic. The extruder uses up the last motor in the box of bits and requires you to insert the tiniest of screws into a winding mechanism. So make sure you have a really small Allen key handy.

You also need to make the idler lever, which you can think of as being a setting screw to set how tight, or slack, you will be pulling in the filament.

Once you put all the pieces together, you are left with the final extruder. With this made, you can now cut a piece of filament and try putting it into the assembly, then winding the mechanism to pull the filament into the assembly and out the other end. This is also where

you fine-tune that 'setting screw' I mentioned. You should be able to gently hold the filament between your fingers and still have it pull through. This takes a bit of tweaking, but can still be tweaked when it's in its final place.

Next time, we'll be fitting the hot end (nozzle) and putting the

Ronnie is the founder and (still!) editor of Full Circle. He's a part-time arts and crafts sort of guy, and now an Arduino tinkerer.

other electronic bits in place.
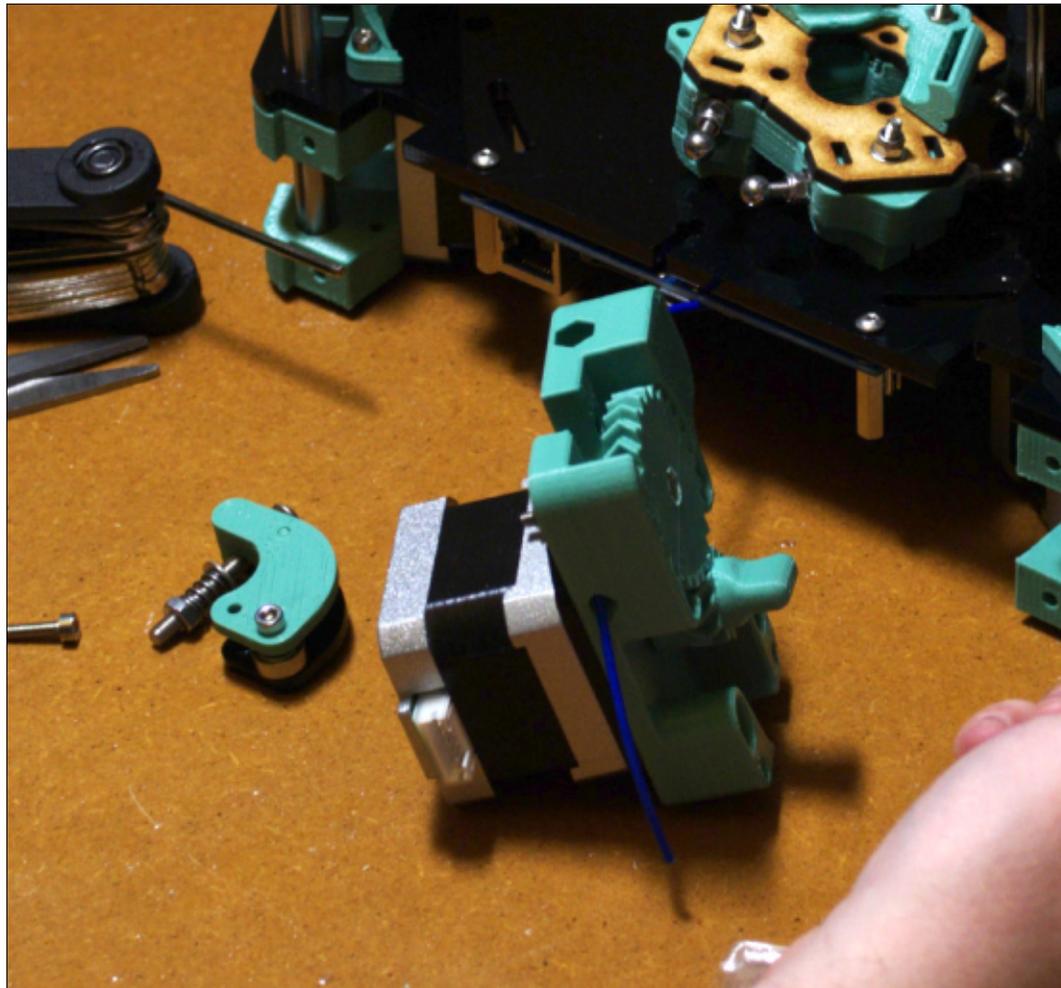
REPRAPPRO RIP

As this issue is released it appears that RepRapPro have ceased trading and closed their store.

This means there are no spares/help for RepRapPro devices.

While this is a great printer it is now unavailable, and I don't recommend you buy a second hand RepRapPro printer since there is no support nor spares available for these printers now.

OTA-9

This list is only a highlight of the few changes available in this update. Please check the detailed changes for all the changes included in this OTA.

IMPORTANT FEATURES

• New 15.04.3 framework
• Media-hub exposure of mpris playlist support
• Update the bluetooth stack to Bluez5
• Media consumption (audio) in scopes
• Smooth refresh of scopes
• Custom ringtone support
• Sound notification on low-battery state
• Download of arbitrary file types in the webbrowser-app
• Convergence changes for the ubuntu-ui-toolkit

BUGFIXES

• Camera fixes for proper resolution support
• Location-service improvements

• Better translation coverage
• Performance boosts, improvements with regards to UI hangs
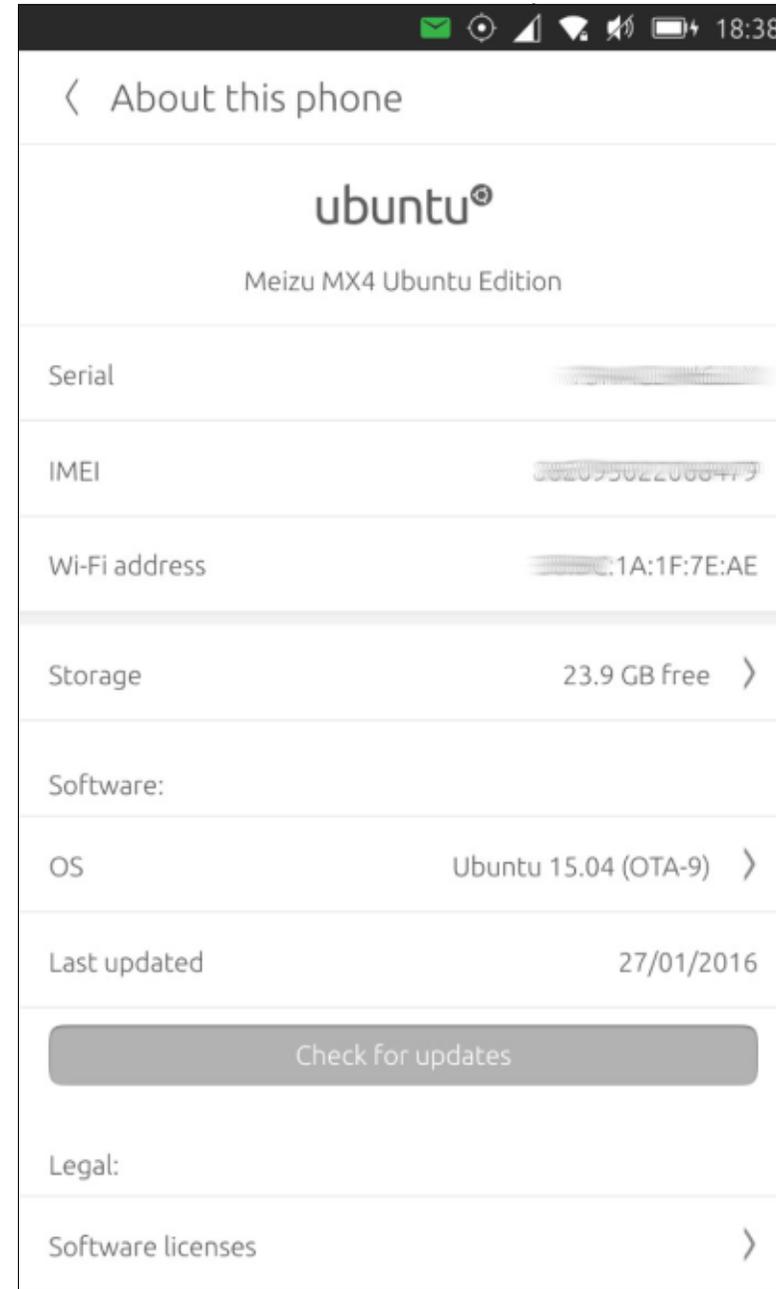
    And many many more...!

DETAILED CHANGES

Commitlog:
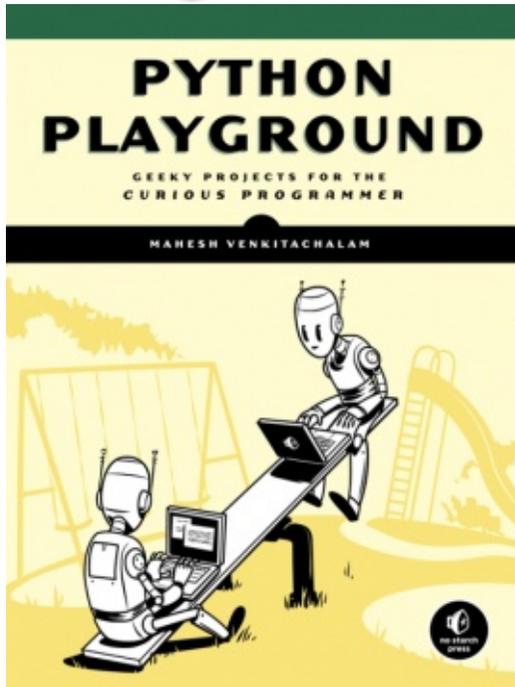http://people.canonical.com/~lzemczak/landing-team/ota/ota-9.commitlog

Milestone bug list:
https://launchpad.net/canonical-devices-system-image/+milestone/ww02-2016

Python Playground: Geeky projects for the curious programmer
By Mahesh Venkitachalam
November 2015, 352 pp.
Publisher: No Starch Press
ISBN: 978-1-59327-604-1

When I first got this book, I was very excited. When I opened the mailer, I was somewhat concerned by the cover... two robots with laptops on a teeter totter. The sub-title "Geeky projects for the curious programmer" helped a little bit, but my eyes kept going back to those robots, no matter how hard I tried to ignore them.

Once I got into the book, however, my concerns were assuaged. Glancing at the table of contents, I was pleased by the project-based format. Part 1 deals with iTunes Playlists and Spirographs, neither of which really excited me. Part 2, however, caused my heart to start to beat faster. The three projects cover Conway's Game of Life, Generating Musical Overtones, and Flock simulations – all of which are of interest to me for various reasons. Continuing down, my eyes were drawn to "Part 5: Hardware Hacking". My heart skipped a beat (which at my age isn't really a good thing) and I immediately jumped directly to the first page of the section. Sure enough, it was talking about using the Raspberry Pi and the Arduino. I was in heaven. I was smiling so hard that my face started to hurt.

Reading through chapter 12 (Introduction to the Arduino) immediately showed that this author has a very good command of Python and his code is very tight. He explains his code in what I call "the breakout format", which is where the code is presented as a block or snippet, then is explained step-by-step. No Starch uses a very nice template that allows the author to put graphical call-out numbers (numbers inside a small black circle) next to a line of code, and then the author simply references the number in the explanation section. This makes it very easy for the reader to quickly refer to a line of code that they need more explanation for.

There are a total of 14 projects that include ASCII art, particle system simulation, as well as using OpenGL. The author also teaches how to use popular and important Python libraries like numpy, matplotlib, pygame and more.

The author states right from the beginning, that this book is not intended to be the reader's first book on Python and I completely agree. While each project has in-depth explanations of not only the code but also the background needed to understand the project, it is far above the level of a beginning programmer. If, however, the reader has some background in other high level languages and has a good grasp of Python syntax, then this is a great book to move beyond the normal command-line type programs. The projects presented are all real-world usable and very relevant to today.

The bottom line is that this is a book that belongs in every Python programmer's library. I have to give this book 5 out of 5 stars. No Starch has a great book on its hands.

★★★★★

Old desktop systems are great for repurposing as a KODI entertainment system server. Stick a few multi-terabyte drives in an old dual or quad core computer, with a $30 fanless video card with HDMI out, along with Ubuntu and KODI installed, and you have a nice 1080p capable entertainment system. This kind of solution might work great for a basement, but if you're looking for a more elegant solution for your living room or a second room, a much smaller device like the MyGica ATV582 is a better solution.

When you open the packaging, the first remarkable thing you'll notice is how small the ATV582 is, it's less than an inch high, and is shorter than the length of an average cell phone. The front bears a couple of lights, a network status light, and a power status light, as well as an infrared sensor. On the right hand side of the ATV582 is a single microSD slot and two USB ports. The back of the device has a gigabit LAN port, an A/V port, an HDMI port, DC power port, and the Wi-Fi antenna. Also

included with the ATV582 are an HDMI cable, a very short A/V cable (which is really more of an adapter than a cable), an AC adapter, and a remote control. The unit also comes with a small quick-start guide and a warning not to return the device to the store, but to call MyGica if you have issues.

The ATV582 is based on the ARM Cortex A9 AMlogic S802-B quad-core processor with the Mali-450 octa-core GPU. There is 1GB of RAM onboard, and 8GB of flash memory. The ATV582 we purchased came with Android 4.4 Kitkat.

Setup was as simple as turning the box on, pulling the plastic tape out of the remote so the battery made contact, and stepping through 4 screens: welcome, language, screen and network. We chose to connect our unit to a LAN connection because we have a lot of large media files stored on another server.

While we didn't have any 4K media files to test the unit's 4K claims, it was more than capable of playing the 1080p MKV files (some as large as 44GB) stored on our

Linux-based KODI network server (shared via SAMBA). The unit ships with an older version of KODI 14.2, but it works just fine for playing media.

The remote control is fairly simple at first glance. It has the following buttons: power on/off, volume up/down, home, select/enter, navigation left/right/up/down, mouse on/off, back, stop, play/pause, fast forward, rewind, and menu. But if you flip the remote over, there is a small qwerty keyboard on the

other side. The remote control comes with a USB receiver that must be plugged into the ATV582 for the remote to work. MyGica has included a QR code in the setup guide for Android phone users who'd prefer to use their phone as a remote control for the device.

One of the improvements the ATV582 has over its baby brother, the larger-sized dual-core ATV520E, is the MyGica user interface. Instead of trying to simplify a desktop with many icons, it has that cleaner look of a touch interface, KODI is in fact one of the first applications on the home screen. The ATV520E also came with a simpler keyboard-less remote. The keyboard on the flip side of the ATV582 remote takes a little bit of getting used to. If you find yourself unable to type using the keyboard characters, press the function key to switch between the character sets. The mouse on

the remote is all but useless for certain Android games, you'll need a real mouse to play some games.

The left side of the ATV582 is used to vent heat. Because the unit is so small there are not a lot of ports, only 2 USB, 1 of which is taken up by the remote's IR receiver. Having a single usable USB port is this unit's biggest shortcoming. For those of you who like to wall-mount everything, the ATV582 also lacks any kind of holes on the bottom for mounting, which means you'll have to resort to using something like 3M velcro tape to mount the unit. Both of these issues are really a direct result of the unit being so small. MyGica could have provided some way to mount the ATV582, but it would have likely been a touch thicker.

The size of the ATV582 is also its best feature, it's so

inconspicuous that it's barely noticeable if you put a couple of picture frames or other decorations next to it. Hidden in the ATV582 are the powerful quad-core processor and octa-core graphics processing unit. They're much more powerful than the ATV520E cousin, and play large size high-definition files just fine. The remote with keyboard was more than expected, and other than gaming usage, works very well for all other tasks. While KitKat is old by Android standards, it's been rock stable the past few weeks – requiring a reboot only

once. At just over $100 CDN, it ended up being a fantastic deal for the price.

Charles is the author of Instant XBMC, and the project manager of a not-for-profit computer reuse project. When not building PCs, removing malware, and encouraging people to use GNU/Linux, Charles has a blog at charlesmccolm.com.

Vivaldi is a new web browser from one of the two original developers of the Opera browser. Opera is still with us, but as Jon says:

"The browser we once loved has changed its direction. Sadly, it is no longer serving its community of users and contributors — who helped build the browser in the first place.

So we came to a natural conclusion: we must make a new browser. A browser for ourselves and for our friends. A browser that is fast, but also a browser that is rich in functionality, highly flexible, and puts the user first. A browser that is made for you." - Jon

INSTALL

Installing is easy. Simply visit https://vivaldi.com and click the download button on the front page. From there, choose your 32/64-bit DEB file. When downloaded, double click on the DEB to install, or install using:

```
sudo apt-get install vivaldi-
beta_1.0.344.37-1_amd64.deb
```

You may need to adjust that command depending on the version number in the filename by the time you read this.

You start Vivaldi using your usual Unity/desktop launcher.

On first start, Vivaldi will ask if you want to import data from another browser, and what data to import.

LAYOUT

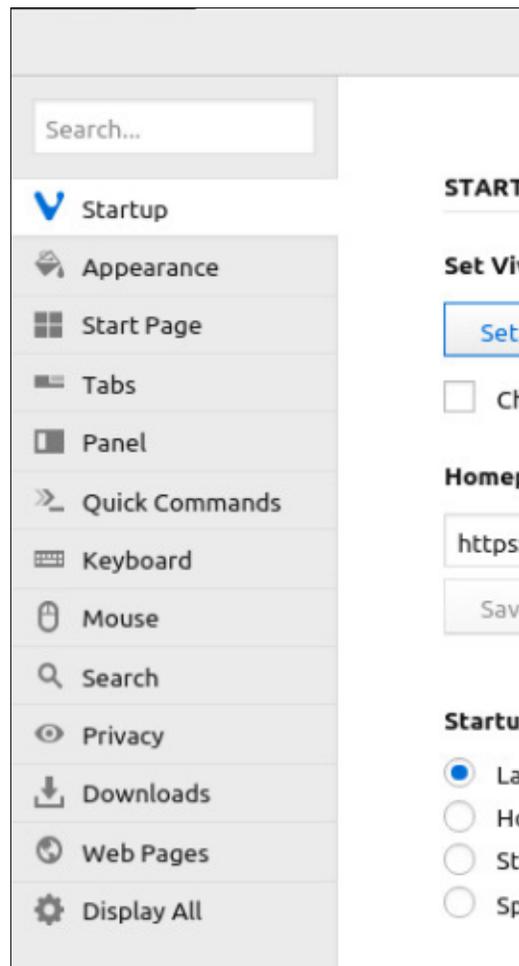Vivaldi has a familiar layout. Very top-left is the Vivaldi icon.

This is your menu for File, Edit, View, etc. Top of the screen has your tabs, navigation buttons with URL and quick search, and below that is (if you want it displayed) your bookmarks bar. You'll also notice what looks like skip forward/back as you'd see in a media player. These are what Vivaldi calls fast-forward and rewind buttons. Can't say I've used them much, if at all, but apparently they'll take you to the first page of the site and predicts the next page.
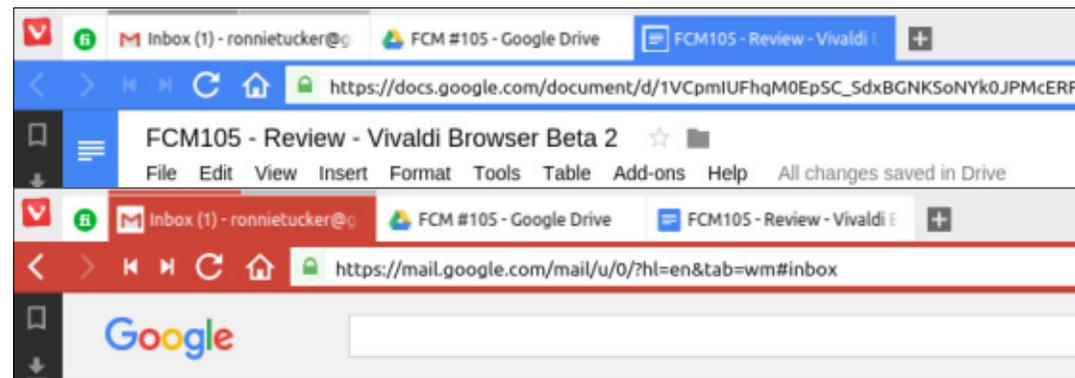
The left side of the screen has a
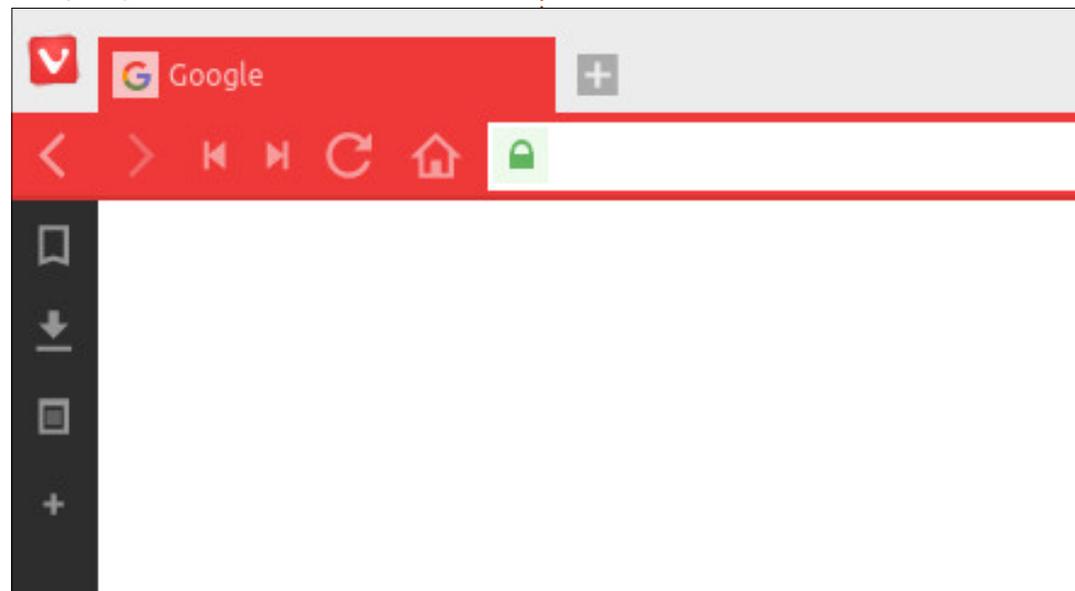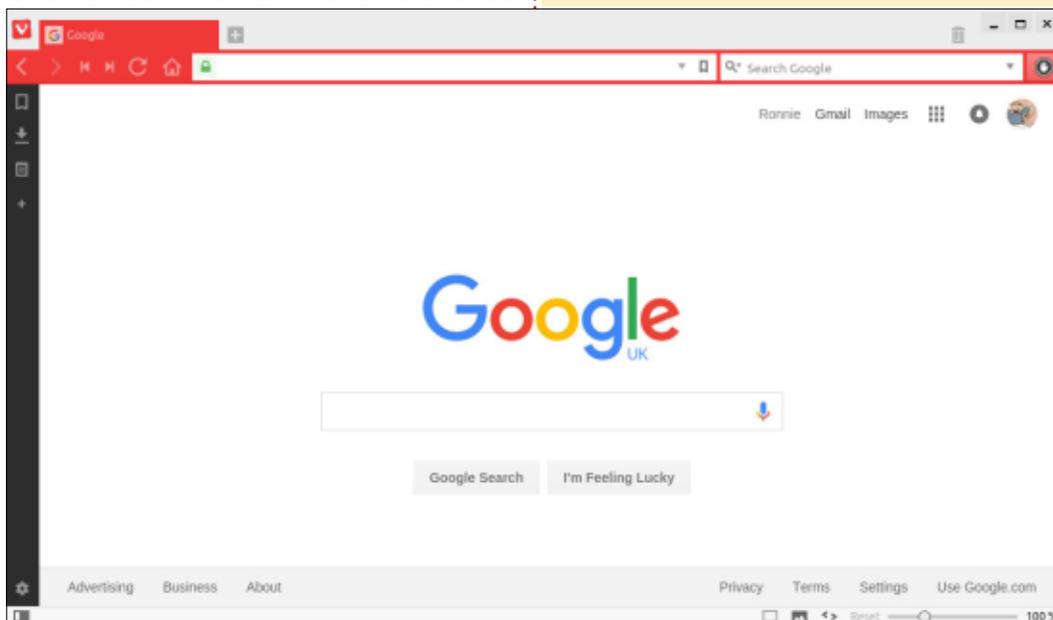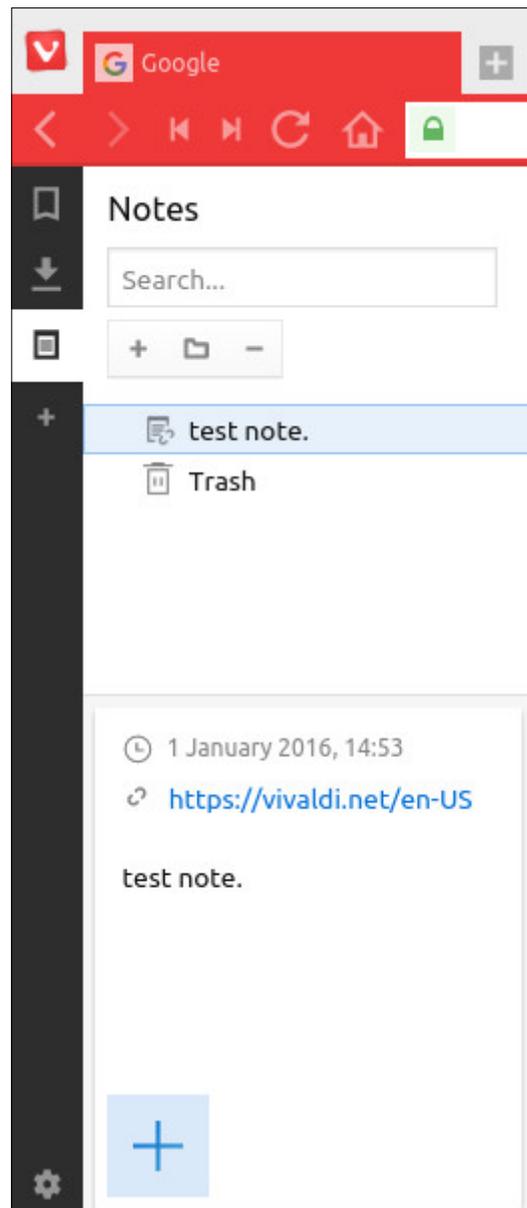
vertical bar (above) which has buttons for (top to bottom) bookmarks, downloads, notes, and an icon to let you add additional panels.

Yes. Notes. You can click the notes icon and save quick reminders for yourself. The '+' button allows you to attach images, or files, to your note. Very handy.

The first thing I noticed was that pages loaded much faster in Vivaldi than in my usual Firefox. And I mean almost instantly. My broadband isn't the greatest, so having a page load within a second/two was a revelation to me.

SETTINGS

Clicking the cog icon at the very bottom left of the screen displays the Vivaldi settings (left).

The settings are divided into categories such as appearance, tabs, privacy, etc. Or, if you want the full Monty, you can click 'Display All'. The settings window has a search feature which is handy for those hard-to-find features. Everything is in here such as default start page, showing/hiding various bars/menus, interface scale, default font type/size, light/dark theme, and access to the numerous keyboard shortcuts that it uses.

TWEAKS

Initially, I thought Vivaldi was a complete rewrite of a browser, but it turns out that it uses Chromium as a foundation. Which is no bad thing as this allows the user to install Chrome extensions. I tried this out by, of course, installing AdBlock.

Vivaldi has a few tricks up its sleeve, though. A nice touch is that the navigation bar and tab will take its colour automatically from the page you're on (above). For example, as I write this in Google Docs, the tab and bar is blue.

If I switch over to my Gmail it will turn red.
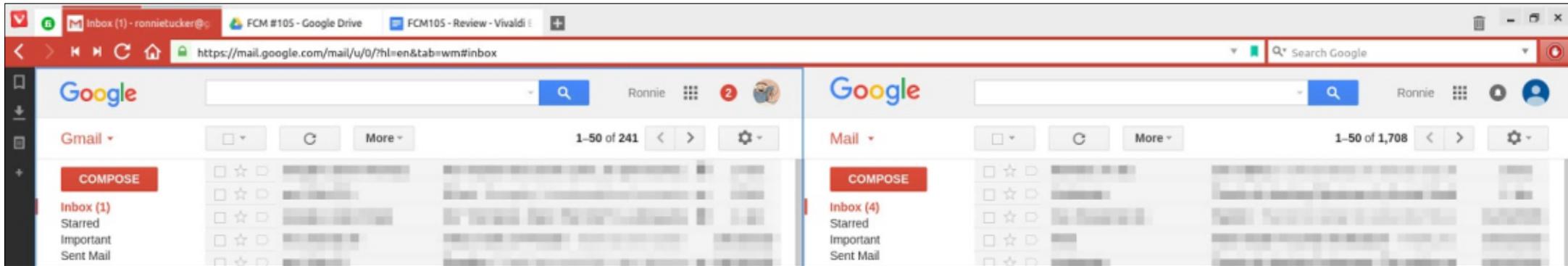
A handy feature in Vivaldi is tab grouping. What I've been doing is opening both my Gmail accounts and grouping them into one tab. If you look closely at the red tab in the photo, you'll see that it has two red bars above it. That's two tabs in one. I can click that to switch between (in this case) two tabs. But there's more! You can also right-click on the tab and click 'tab stack' and it will split the screen to show your tab group.

Couple that with the note-taking bar and you're set!
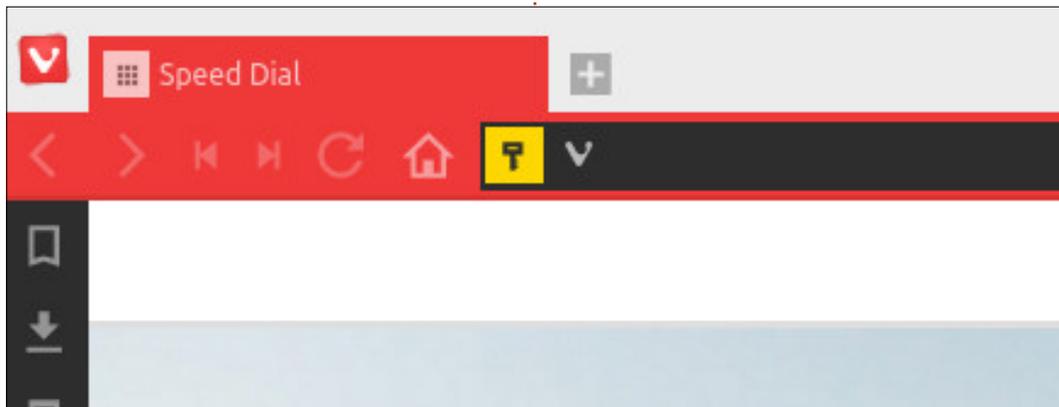
Privacy

I'm no privacy expert, so can't comment on its security, but I'd have to assume it is pretty secure if it's using Chromium as its underbelly.

You can click the Vivaldi button and choose File > New Private Window, and it will display a new window with a yellow icon (with a black key) and with a black URL bar (below).

Missing:

What Vivaldi doesn't do, but I hear is coming, is the synchronisation of bookmarks between devices. This doesn't bother me as I use EverSync to go between (formerly Firefox) Vivaldi on my desktop machine, Firefox on my laptop, and Chrome on my tablet and phone.

Flash is also missing from Vivaldi. Whilst some replies in their forum recommend installing Chrome (to use its plugins), or to install the Pepper Flash package(s) from the repos. I couldn't get Flash to work with Vivaldi after trying both ideas.

Conclusion:

I have to say, I'm pretty impressed with Vivaldi. I wasn't expecting much (since it's only the second beta), but it certainly seems faster and I love the tab grouping and screen-split features.

Give it a try. You've nothing to lose.

Ronnie is the founder and (still!) editor of Full Circle. He's a part-time arts and crafts sort of guy, and now an Arduino tinkerer.

LETTERS

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ubuntuforums.org/forum display.php?f=270

FULL CIRCLE NEEDS YOU!

⚠ Without reader input **Full Circle** would be an empty PDF file (which I don't think many people would find particularly interesting). We are always looking for articles, reviews, anything! Even small things like letters and desktop screens help fill the magazine.

See the article **Writing for Full Circle** in this issue to read our basic guidelines.

Have a look at the last page of any issue to get the details of where to send your contributions.

Q&A
Compiled by Gord Campbell

If you have a Linux question, email it to: misc@fullcirclemagazine.org, and Gord will answer them in a future issue. Please include as much information as you can about your query.

Q I want to install VLC Media Player. What password can I use to authenticate?

A (Thanks to *grahammechanical* in the Ubuntu Forums) When we install Ubuntu, we are asked to set a username & password. That username is the name we log into Ubuntu with, and that password authenticates logging in with that username.

Once we login to Ubuntu, we can do most tasks without needing to authenticate the action. But there are certain tasks that only we are allowed to perform, and for those tasks we are asked to authenticate the action. We enter the password that we created when we installed Ubuntu.

Q Can't pair bluetooth keyboard logitech k480 with Ubuntu 15.10.

A (Thanks to *jeremy31* in the Ubuntu Forums) You need to press the button on the keyboard for "Windows/Android/Chrome OS" to put it in discovery mode. Then use the bluetooth GUI to search. (Gord adds: This answer applies to most Bluetooth devices, irrespective of OS.)

Q I have an old PC that has Windows XP which I rarely use. I want to try Ubuntu OS.

A If the old computer has 1 GB of memory, it should be fine with Xubuntu, Lubuntu or Ubuntu Mate. If it has 512 MB of memory, and the video does not steal any of that memory, it should run reasonably well. If it has less than 512 MB, it will not provide a happy experience.

Skills you need: how to boot from DVD or USB, how to deal with partitions.

Q How can I configure Apache2 to serve pages from a folder under my Home?

A (Thanks to *SlidingHorn* in the Ubuntu Forums) From what I'm reading, you'll have to make 2 edits:

In /etc/apache2/sites-available/000-default.conf, find "DocumentRoot" and change to the following:

```
DocumentRoot
/path/to/new/root
```

In /etc/apache2/apache2.conf, find:

```
<Directory /var/www/html/>
Options Indexes
FollowSymLinks
AllowOverride None
Require all granted
</Directory>
```

And change the "/var/www/html" to the absolute path to your desired home directory.

TOP QUESTIONS AT ASKUBUNTU

* What is the meaning of the `|` symbol in the shell?
http://goo.gl/wME5NU

* I installed a program by getting its source code, and then running `sudo make install`; how to make `apt-get` know about it?
http://goo.gl/7Vcpl0

* Why does ^C, ^V, etc. appear in the terminal when I use the Ctrl+character keyboard shortcut?
http://goo.gl/AA09Ov

* List all recently changed files (recursive)
http://goo.gl/wV3e1Z

* How to charge my Ubuntu phone's battery off my Ubuntu laptop's battery?
http://goo.gl/GilP6p

* Where should I keep my personal files while keeping the pathname short?
http://goo.gl/zMfj1Z

Q&A

* How to enter password only once in a bash script needing sudo
http://goo.gl/fLesVY

* Can I minimize a window into a box on Unity?
http://goo.gl/LTRICz

* How to set the default program to open a certain file-type in a certain folder?
http://goo.gl/1BQ1LK

Tips and Techniques

Why?

Why would someone install Linux with an "LVM" disk, when they don't know what that means?

Why would someone install Linux with a software RAID, when they have not spent the time required to understand how software RAID works?

Why would someone assume that their computer will work forever, when their car won't?

Gord had a long career in the computer industry, then retired for several years. More recently, he somehow found himself "The IT Guy" at a 15-person accounting firm in downtown Toronto.

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A short podcast (<10min) with just the news. No chit-chat. No time wasting. Just the latest FOSS/Linux/Ubuntu news.

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AVAILABLE
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To understand how PGP email works, you first need to know the basics of public/private key encryption, a.k.a. RSA cryptography (if you already know, you can skip this paragraph). It might be compared to a P.O. box where everyone can see your box number, but only you know the combination to get in. In an RSA public/private key pair, the public key can be used to encrypt information; once encrypted, the only thing that can decode the message is the private key. PGP is the email application for the RSA concept. I can send my friend an encrypted message without going to the trouble of driving to their house with a flashdrive to agree on a key. All my client software has to do is find my friend's public key from a server, and the rest is a breeze.
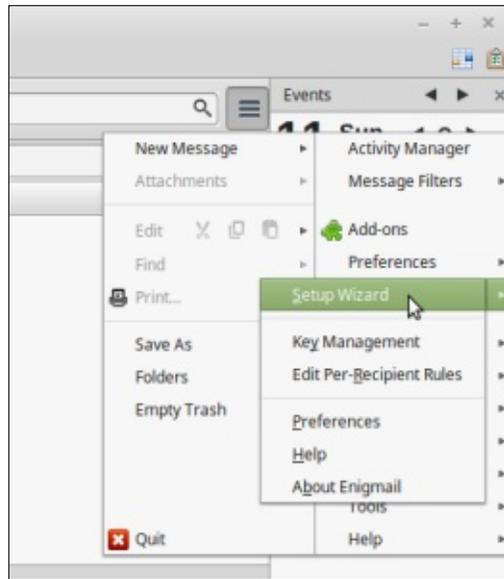
To get started on this, you first need to have Thunderbird installed. If not, go ahead and install it by typing in a terminal window:

```
sudo apt-get install
thunderbird
```
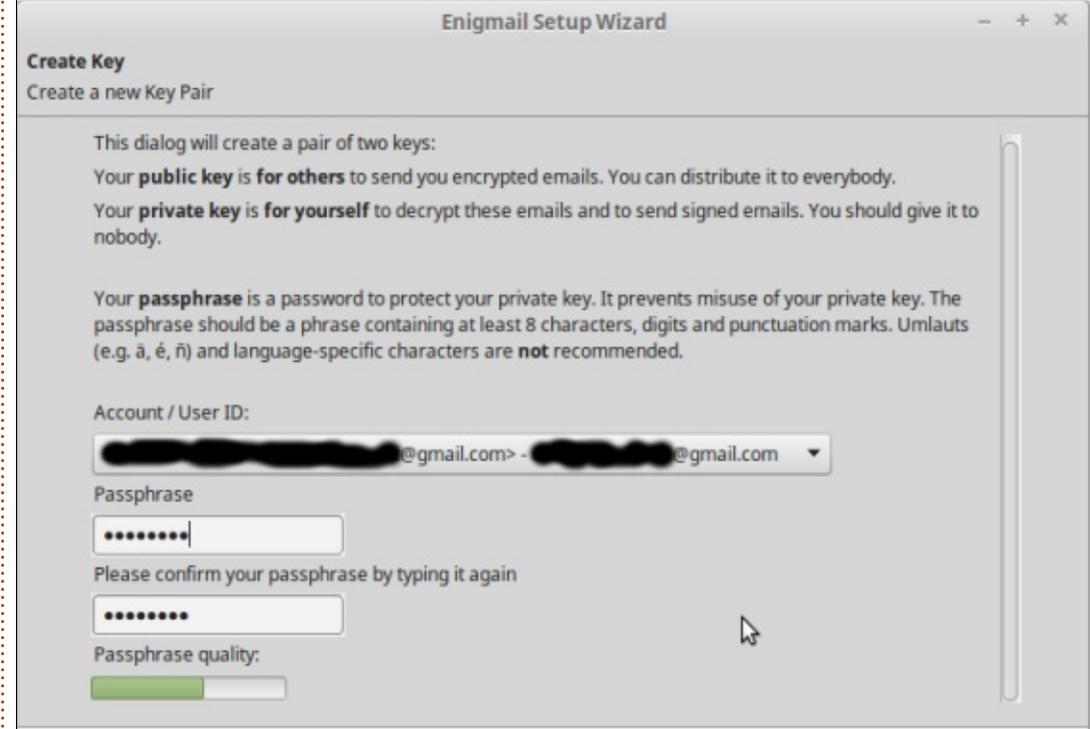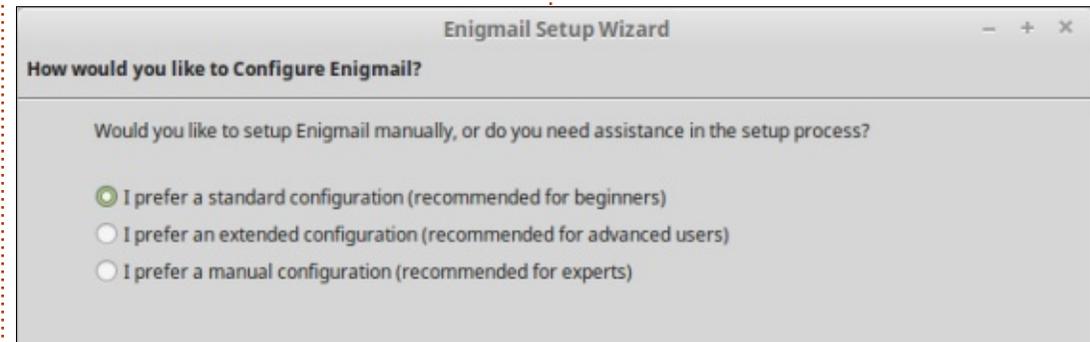
Next, install enigmail

```
sudo apt-get install enigmail
```

Assuming that you now have your email setup in Thunderbird, launch the application and go to Menu>Enigmail>Setup Wizard.

Proceed by setting up your PGP key.

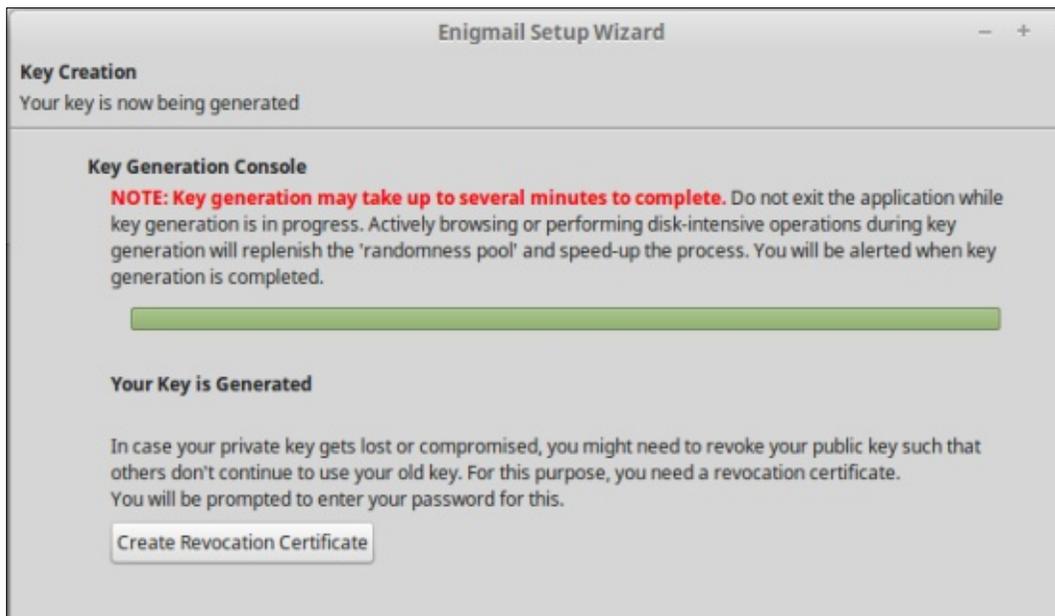Enter an 8 digit passphrase to encrypt your private key.

Your computer will then generate a 4096-bit RSA keypair.

After generating the key, follow through by saving the Revocation

Certificate somewhere safe such as a flash drive.

You're almost done! All that remains now is backing up your

SECURITY

private key, and publishing your public key to a few servers so that your friend's email client can automatically download it.

To backup your private key, go to (in Thunderbird) Menu>Enigmail>Key Management. Select your key and then, under Key Management, go to File>Export Keys to File, and click

Export Secret Keys.

Again, I recommend that offline storage would work best such as a flash drive. Now, to export your public key to a keyserver, without closing the Key Management window, select your key and go to Keyserver>Upload Public Keys.

There you should see a list of keyservers to choose from. Any of
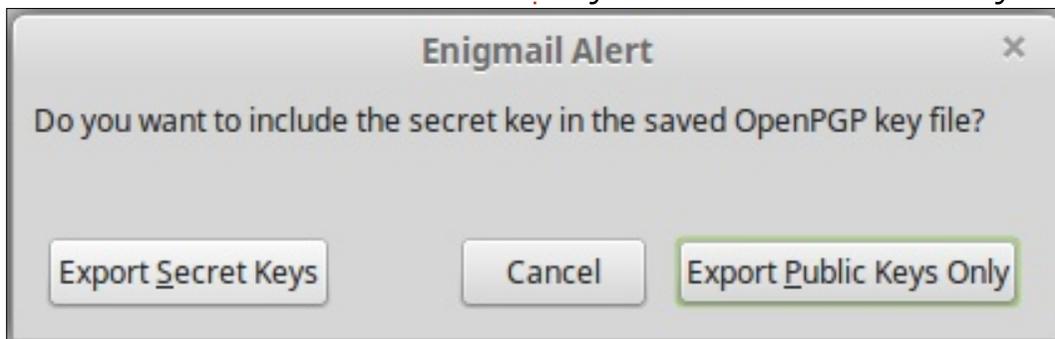
the three will work fine, but it also wouldn't be a bad idea to upload your public key to all of the servers that are listed.

Now you are all set to start receiving encrypted PGP emails! Also, when you go to send someone an encrypted message, Thunderbird will help you find their public key on one of the servers. With a key length of 4096-bit, this totally makes your private messaging military grade.

At long last, there is a true, fast, adrenaline-pumping racing game available for Linux! That game is DIRT Showdown, developed and published by Codemasters. It was originally released for Microsoft Windows, Xbox 360, and PlayStation 3 back in 2012. Then, in 2014, it was released for Mac OS X, and, most recently, released for Linux, August 2015.

DIRT Showdown can be purchased and downloaded for Ubuntu through Steam for $14.99 (recent Steam sales have had it as low as $2.99). The game is much more than a racing game as it also contains two other playing styles, which are named Demolition and Hoonigan. There are different types of Races, just like there are different types of Demolition and different types of Hoonigan events. The Racing events and the Demolition events are pretty much self-explanatory. The Hoonigan events can be obstacle courses where you must complete tricks within a limited time, or they can be courses in which you must

smash different color boxes in the right order (as specified by the computer), also within a limited time. These are all part of what's called the Showdown Tour. In addition to the Showdown Tour, there are two other modes of playing:
• Online Multi-Player (which at this time is almost non-existent due to a lack of online players)
• Joyride in which you are the only car and free to roam anywhere you want, but must collect challenges in the form of a scavenger hunt.

Aside from the Multi-Player aspect of the game, exhilarating thrills abound as the game has the potential to appeal to a wide variety of gamers, from the casual to the hard-core.

Playing DIRT Showdown is pretty straightforward. It is recommended that you play using a game controller, which is what I did with my Razer Onza controller and it was flawless. You can also play the game with mouse/keyboard if you so desire. There really isn't a tutorial but anyone who's played a car racing game will feel right at home with this one; it's not too difficult to pick up.

The responsiveness to controls has had zero lag in all of the tracks I've played. Initially in the Showdown Tour's Pro tournament, there are only a couple of tracks available, but by racing these tracks and placing in one of the top spots, more tracks become available. After completing all tracks in the beginner's "Pro" league, then you can advance to the "All-Star" league followed by the "Champion" league. Finally, the "Legend" league is the top tier which is unlocked only after completing all previous three leagues. Like most racing games, you have the choice of which car to choose and you can also level up your car by purchasing Power, Handling or Strength upgrades with the prize money you're awarded from previous races. In no time you can have a fast, powerful car that can take more than a beating. Alternatively, you can also purchase other cars as they

become unlocked by winning various events.

Although the game was optimized for AMD GPUs, and I'm using an Nvidia GTX 960, I've had zero problems with the game so far. The graphics have been fantastic, and there have been no glitches running the game at near maximum settings. There is a built-in Benchmark that gave me an average of 51 frames-per-second so performance has not been an issue yet and I've already been playing the game for quite a while. There have been a few scenes that almost left me in awe with the multi-layered sunsets displayed behind the race tracks. The sound is your standard high-octane, full-throttle sonic experience. Sound effects of idling engines revving up to maximum speed in time, followed by the wearing down of brake pads and rubber tires as they burn in unison with the pavement in a struggle to stop the fast moving vehicle before it collides with another car, is like music to my ears. The voice narrator is a sportscaster who gives you the play-by-play while managing to add a bit of humor from time to time. The soundtrack is your typical rock soundtrack found in most racing

games. All in all, the sound, the graphics and the controls are definitely strong aspects of the game, especially for a 2012 release.

Besides the lack of a dedicated tutorial, which for this particular game is not really needed, the only other negative point is the online play mode. I'm sure it works great; however, I haven't been able to really test it out due to there being a lack of online gamers. I've tried multiple times to play online against other players but haven't been able to pair up against even one single person. In fact, at the game's Steam Forum site, there is a thread asking for friend requests to join in online playing. I am

almost certain that the lack of online gamers is due to the fact that DIRT Showdown was released almost four years ago and there have already been at least two other games from the DIRT series released ever since. It is now up to Linux gamers to breathe new life into the online experience for this game by buying it and playing it against possibly other Linux gamers.

Despite the lack of online competition, I still recommend DIRT Showdown to fellow Linux gamers as it happens to be one of the best car racing games available for Linux at the moment. The graphics, though no longer revolutionary, are still pretty

impressive. The sound is great, and the overall playability makes it feel like it was originally developed for Linux which makes DIRT Showdown a game worth getting. The lack of online competition makes me drop the rating by a full star but everything else makes this a must have for racing aficionados and casual gamers alike.

★★★★☆

Minimum Requirements:
OS: Ubuntu 14.10, Mint 17.1 or similar Linux distribution
Processor: AMD Athlon 64 x2 or Intel Core2Duo @3.2Ghz
Memory: 4 GB RAM
Graphics: nVidia/AMD OpenGL 4.1 level compatible
Graphics Memory: 1GB
Hard Disk Space: 12GB
Sound: PulseAudio/ALSA Compatible

Oscar graduated with a music degree from CSUN, is a Music Director/Teacher, software/hardware beta tester, Wikipedia editor, and active member of the Ubuntu community. You can email him at: 7bluehand@gmail.com

PATRONS

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CHA CHA CHA CHANGES

Our admin went AWOL for months, and I had no idea if/when the site would/wouldn't get paid. Initially the plan was to move the site and domain name to my hosting, but eventually I managed to track him down and get the FCM domain name, and site hosting transferred to me.

The new site is now up. **HUGE** thanks to **Lucas Westermann** (Mr. Command & Conquer) for taking on the job of completely rebuilding the site, and scripts, from scratch, in his own time.

The Patreon page that I've set up is to help me pay the domain and hosting fees. The yearly target was quickly reached thanks to those listed on this page. FCM is not going away. Don't worry about that.

Several people have asked for a PayPal (single donation) option, so I've added a button to the side of the site

A big thank you to all those who've used Patreon and the PayPal button. It's a big help.

https://www.patreon.com/fullcirclemagazine

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