



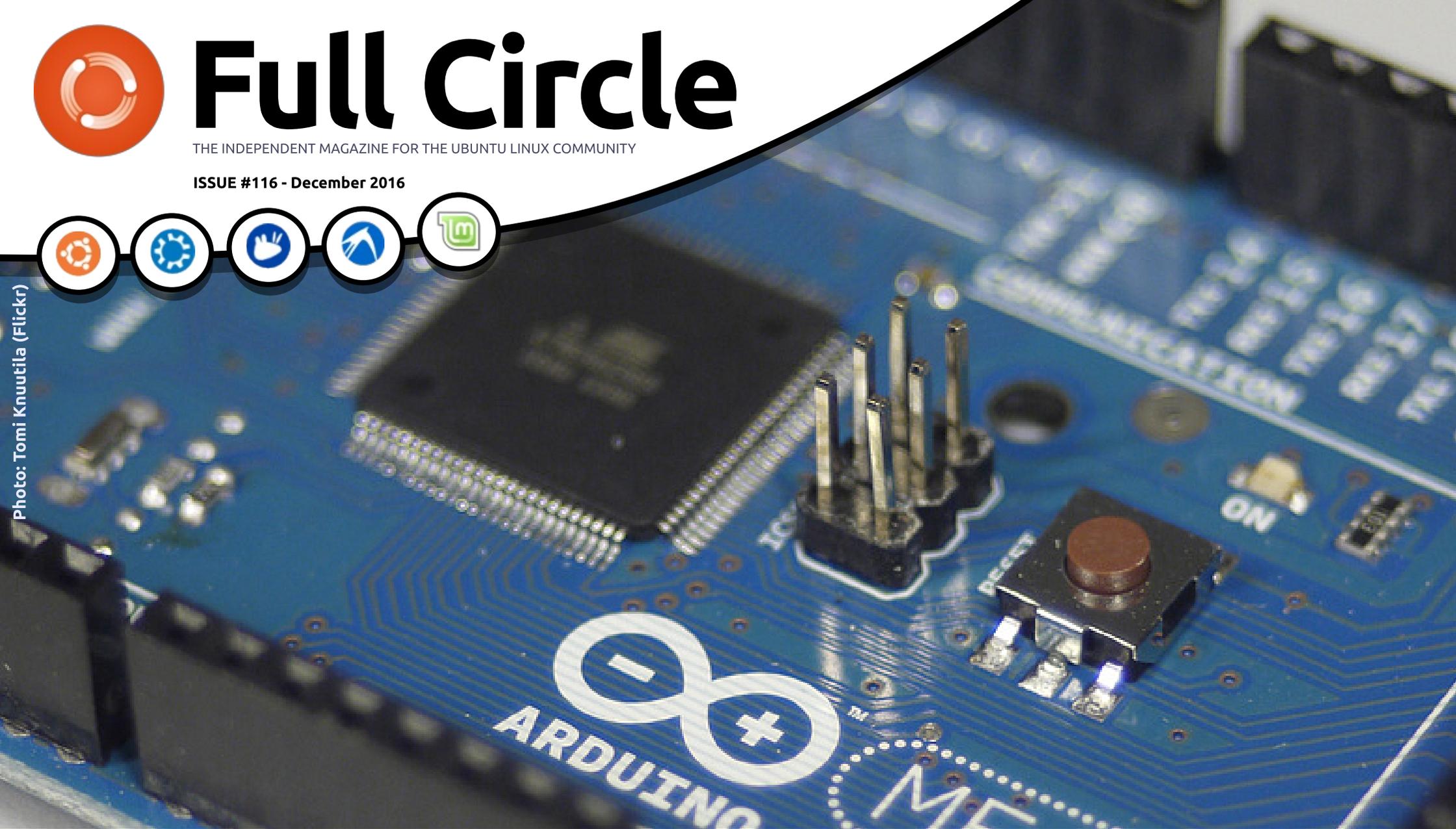
Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #116 - December 2016



Photo: Tomi Knuutila (Flickr)



ARDUINO PROGRAMMING IN PYTHON

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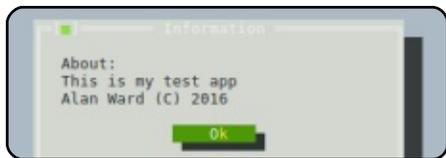
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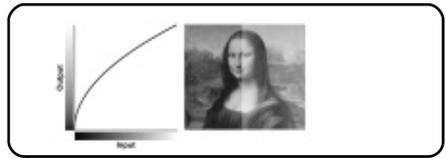
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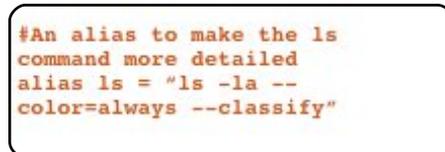


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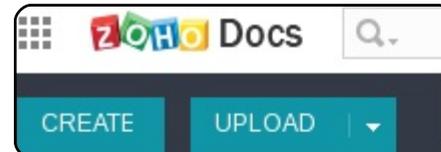
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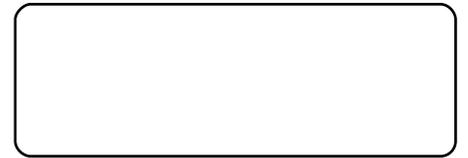
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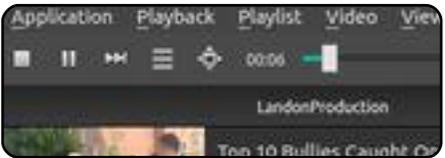
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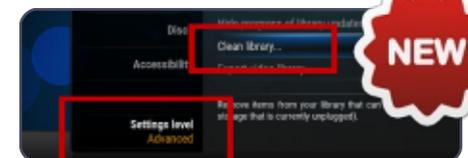
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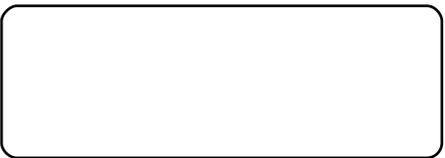
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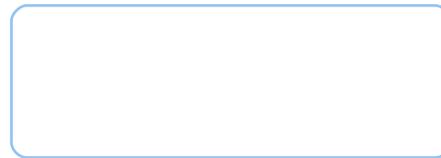
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WELCOME TO THE LAST ISSUE* OF FULL CIRCLE.

The usual suspects are here with some LaTeX, FreePascal, Inkscape and Python. We also have some Android and KODI for you from Charles, and (of course) some Q&A from Gord.

Ubuntu Games this month focuses on a golden oldie that's been revived. If you're old (like me) and remember the classic 'Command & Conquer' game then you'll definitely want to read about OpenRA which is an open source implementation of that engine. RA being for 'Red Alert' which came after C&C. It allows you to play the original C&C, Red Alert, and even the predecessor to C&C, Dune.

In his Python column, Greg is laying the ground work for getting your Arduino hands dirty with some Python. No actual Python this month, but this is for those of you new to Arduino, wondering which one to buy, and then next month there'll be some Python.

Alan Ward gives us his opinion on why not all Android devices are a good thing. Especially since Google recently announced that their Nexus 5 (one of which I own) won't be getting Android 7 (Nougat). Is this a good time then to switch to Ubuntu Touch on your device?

And, before I go and leave you in peace, I hope you're also listening to the **Full Circle Weekly News**. I'm hoping that the holiday season won't affect the schedule any. To listen: check the main FCM site, or listen via the various other outlets that are listed on the main site (Stitcher etc.).

All the best, and keep in touch!

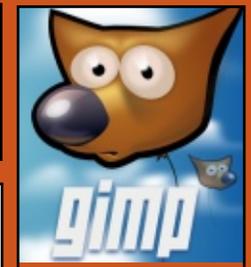
Ronnie

ronnie@fullcirclemagazine.org

* The last issue of 2016 that is. :)



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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.

RSS:

<http://fullcirclemagazine.org/feed/podcast>



ZERONE HOSTING LAUNCHES NEW CLOUD CONTROL PANEL FOR LINUX AND WINDOWS VPS HOSTING SERVICES

ZerOne Hosting's Linux and Windows VPS Hosting plans are now available with a new Cloud Control Panel. The new control panel offers to all clients the convenience of distributing their resources on multiple VPS servers in whichever way they need them to be configured. Clients only need to buy their resources, starting from 2GB RAM and 1 vCPU core and scaling up to 128GB RAM and 24 vCPU cores, and then distribute them on as many VPS servers as they need.

Source:

<http://www.digitaljournal.com/pr/3155214>

CANONICAL RELEASES SNAPD 2.18 SNAPPY DAEMON FOR UBUNTU CORE 16 AND UBUNTU 16.10

Snapd 2.18 is here three weeks after the snapd 2.17.1 point release, bringing a large number of improvements and many fixes for the most annoying issues reported by users since then, improving the Snappy experience on Ubuntu. On top of that, the Snappy team also announced today a new candidate core snap.

Prominent new features of snapd 2.18 include the "snap info <name|path >" command for viewing details about a certain Snap package, support for the "snap find --section=< name >" command, the ability to view featured Snaps using the "snap find" command without any other arguments, and support for delta downloads on slow connections.

Source:

<http://news.softpedia.com/news/canonical-releases-snapd-2-18-snappy-daemon-for-ubuntu-core-16-and-ubuntu-16-10-510488.shtml>

ALT LINUX 8.1 WORKSTATION RELEASED WITH LINUX KERNEL 4.4.34, MATE & KDE DESKTOPS

It's been a long time since we last wrote about ALT Linux, but it looks like the development team was quite busy updating the independently-developed GNU/Linux distribution with the latest Open Source technologies (see below for details). ALT Linux 8.1 Workstation ships with both MATE 1.12.1 and KDE Plasma 5 desktop environments.

Taking a closer look at the internals of the ALT Linux 8.1 Workstation operating system, we can notice that it's powered by the long-term supported Linux 4.4 kernel, version 4.4.34 is included in the ISO images, as well as all the

recent software releases, including the LibreOffice 5.2 office suite and Mozilla Firefox 45.5.0 ESR web browser.

Source:

<http://news.softpedia.com/news/alt-linux-8-1-workstation-released-with-linux-kernel-4-4-34-mate-kde-desktops-510491.shtml>

PRODUBAN CHOOSES RED HAT AS TECHNOLOGY PARTNER TO DELIVER MODERN CLOUD SERVICES WITH KUBERNETES AND OPENSTACK

Red Hat, the world's leading provider of open source solutions, announced that Produban, the IT services arm of the Spanish banking leader Grupo Santander, has picked Red Hat as its technology partner to create a modern cloud infrastructure with Red Hat OpenShift Container Platform on the Red Hat OpenStack Platform, marking what is believed to be one of the world's first production deployments of Kubernetes and containers on

OpenStack.

Produban's global footprint includes 10 datacenters across four countries that support all of Grupo Santander's businesses, including Banco Santander, S.A., one of Europe's largest banks and among the largest banks globally by market value. It specializes in Infrastructure and IT Operations, priding itself on providing reliable and modern IT services that can keep the bank at the forefront of innovation.

Source:

<http://military-technologies.net/2016/11/27/produban-chooses-red-hat-as-technology-partner-to-deliver-modern-cloud-services-with-kubernetes-and-containers-on-openstack/>

MICROSOFT ENABLES LINUX DESKTOP USERS TO SEND SMS TEXT MESSAGES WITH LATEST SKYPE ALPHA

Linux-based desktop operating systems can sometimes be incredible for productivity and security, but they can be deficient

from a feature and application perspective too. Windows 10 and macOS Sierra, for instance, are chock-full of some exciting software that is simply not available on Linux, such as Microsoft Office and Adobe Photoshop, although alternatives (LibreOffice and Gimp for example) can sometimes be passable.

With all of that said, Microsoft has delivered an incredible feature to Linux-based desktop operating systems by way of the latest Alpha version of its Skype client. What is this exciting feature of which I speak? Well, the newly-released Skype for Linux 1.13 allows users to send SMS text messages from the operating system!

Source:

<http://betanews.com/2016/11/27/microsoft-linux-sms-skype/>

JOLLA'S SAILFISH OS NOW CERTIFIED AS RUSSIAN GOVERNMENT'S FIRST 'ANDROID ALTERNATIVE'

The future for one of the few remaining alternative mobile OS platforms, Jolla's Sailfish OS, looks to be taking clearer shape. The Finnish company which develops and maintains the core code, with the aim of licensing it to others, announced Sailfish has achieved domestic certification in Russia for government and corporate use.

In recent years the Russian government has made moves to encourage the development of alternatives to the duopoly of US-dominated smartphone platforms, Android and Apple's iOS — flagging Sailfish as one possibility, along with Tizen. Although Sailfish looks to have won out as the preferred Android alternative for Russia at this point.

The government has said it wants to radically reduce its reliance on foreign mobile OSes — to 50 per cent by 2025 vs the 95 per cent of the market garnered by Android and iOS in 2015.

Source:

<https://techcrunch.com/2016/11/29/jollas-sailfish-os-now-certified-as-russias-first-android-alternative/>

UBUNTU 16.04.2 LTS LANDS JANUARY 19, 2017, WITH UBUNTU 16.10'S LINUX 4.8 KERNEL

Canonical's Leann Ogasawara informed about the upcoming second point release of the Ubuntu 16.04 LTS (Xenial Xerus) Linux-based operating system.

After publishing the release schedule for the Ubuntu 17.04 (Zesty Zapus) operating system, which is currently under heavy development, it appears that Canonical also managed to update the current Xenial road map with a release date for Ubuntu 16.04.2 LTS (Xenial Xerus) as of Thursday, January 19, 2017.

Ubuntu 16.04 LTS (Xenial Xerus) is a long-term supported release, which means that it will receive security fixes and software updates for five years, until April 2021. During this time, the OS usually gets a total of five point releases. Currently, Ubuntu 16.04 LTS and 16.04.1 LTS are powered by the LTS Linux 4.4 kernel branch.

Source:

<http://news.softpedia.com/news/ubuntu-16-04-2-lts-lands-january-19-2017-with-ubuntu-16-10-s-linux-4-8-kernel-510572.shtml>

CANONICAL ANNOUNCES THE AVAILABILITY OF UBUNTU ADVANTAGE VG ON AWS MARKETPLACE

Canonical and Amazon Web Services (AWS) are to deliver best-in-breed cloud support by allowing AWS users to purchase the Ubuntu Advantage (UA) Virtual Guest package, which promised to deliver the professional support needed to be successful in the cloud. The announcement was made November 28, 2016, as part of Amazon's AWS re:Invent 2016 conference dedicated to cloud experts around the globe.

We believe that those of you who will attempt to purchase Canonical's Ubuntu Advantage Virtual Guest professional support package via the AWS marketplace need to know all of its benefits. As such, we're informing you that you'll get access to Canonical's

Livepatch Service for rebootless kernel upgrades for your Ubuntu 16.04 LTS (Xenial Xerus) images using the long-term supported Linux 4.4 kernel.

Additionally, buyers will get direct access to Canonical's Landscape (the SaaS version) system management tool if they plan on using the Ubuntu Linux operating system at scale, access to Canonical's Knowledge Hub and all the latest security fixes, as well as up to 24/7 Web- and telephone-based support from experts in the field, along with an option to get a dedicated Canonical support engineer.

Source:

<http://news.softpedia.com/news/canonical-announces-the-availability-of-ubuntu-advantage-vg-on-aws-marketplace-510565.shtml>

ZENTYAL SERVER 5.0 OUT NOW BASED ON UBUNTU 16.04 LTS, ADDS NEW HTTP PROXY MODULE

The Zentyal development team announced the release and

immediate availability for download of the Zentyal Server 5.0 Linux-based server-oriented operating system with Active Directory interoperability.

Based on Ubuntu 16.04 LTS (Xenial Xerus), Zentyal Server 5.0 comes with the latest Open Source software and GNU/Linux technologies, including an untouched Samba 4.5.1 implementation from upstream, which puts a layer of performance to the AD (Active Directory) interoperability of the small business server.

Zentyal Server 5.0 also ships with the trusted SOGo 3.2.1 groupware server, which features a brand-new, modern web-based user interface based on recent technologies and designed to offer users an improved look and feel with its stunning visual effects, as well as more usability and improvements on the ActiveSync implementation.

Source:

<http://news.softpedia.com/news/zentyal-server-5-0-out-now-based-on-ubuntu-16-04-lts-adds-new-http-proxy-module-510603.shtml>

UBUNTU-BASED TRISQUEL GNU/LINUX 8.0 "FLIDAS" ENTERS DEVELOPMENT WITH MATE 1.12.1

The development team behind Trisquel GNU/Linux, a 100% libre distribution based on the Ubuntu Linux operating system, announced the availability of the first Alpha images for the upcoming Trisquel GNU/Linux 8.0 release.

Dubbed Flidas, Trisquel GNU/Linux 8.0 is powered by a Linux-Libre 4.4 based kernel and built around the lightweight MATE 1.12.1 desktop environment. The inclusion of MATE, which is a fork of the old GNOME 2 desktop, should enchant many of the old-school Trisquel users, and it looks like the team also did some polishing to both the control center and file manager components.

Being an Alpha version and all that, the first development ISO images of Trisquel GNU/Linux 8.0 "Flidas" do not yet contain a predefined software collection,

nor a Live or text mode (CLI) installer.

Source:

<http://news.softpedia.com/news/ubuntu-based-trisquel-gnu-linux-8-0-flidas-enters-development-with-mate-1-12-1-510625.shtml>

CANONICAL OFFERS DIRECT DOCKER SUPPORT TO UBUNTU USERS

Enterprise Ubuntu users running Docker in production now have a new source for Docker support: from Canonical.

Canonical and Docker announced joint support for the commercial edition of Docker Engine on Ubuntu. The pair also will provide updates for Docker on Ubuntu through an application delivery system Canonical originally devised.

This isn't the first time Docker has partnered with an enterprise vendor to offer support. HP Enterprise, for example, includes support with its Docker-ready hardware and software products,

and Microsoft offers the same as part of the out-of-the-box enterprise experience for the new version of Windows Server.

David Messina, SVP Product and Corporate Marketing of Docker, cited a "large, positive overlap of enterprise users that use Ubuntu [and] that use Docker" as a key motive. "We see a significant install base of Ubuntu users using Docker, and we collectively thought this was a great relationship, but not the only one of its kind."

Docker and Canonical also allow customers the choice of whichever support channel they're most comfortable with. If a company already has a relationship with Docker, it can use that. If it's already a Canonical customer, it can employ its existing Canonical service contract.

Source:

<http://www.infoworld.com/article/3146044/application-development/canonical-offers-direct-docker-support-to-ubuntu-users.html>

CHROME 55 ROLLING OUT TO MAC, WINDOWS, AND LINUX, KILLS FLASH BY DEFAULTING TO HTML5

Over the past year, Google Chrome has been implementing a multi-phase plan to de-emphasize Adobe Flash. Rolling out now to Mac, Windows, and Linux, Chrome 55 will take the major step of defaulting to HTML5 on the majority of sites.

In September with version 53, Chrome blocked Flash-based page analytics and other background elements. A version later Chrome began rewriting embedded YouTube Flash players to use HTML5. Taken together these changes improve security, reduce power consumption, and lead to faster load times.

Chrome 55 takes the larger and more user-facing step of defaulting to HTML5. Sites that only support Flash are exempted, as are the top 10 sites on the web for a year:

YouTube.com, Facebook.com, Yahoo.com, VK.com, Live.com,

Yandex.ru, OK.ru, Twitch.tv, Amazon.com, and Mail.ru.

Source:

<https://9to5google.com/2016/12/01/chrome-55-stable-adobe-flash-html5/>

GNOME SOFTWARE 3.22.3 LETS USERS UPGRADE TWO FEDORA LINUX VERSIONS AT A TIME

A new maintenance version of the GNOME Software package manager has been released on the first day of December 2016, versioned 3.22.3, for the GNOME 3.22 desktop environment.

As you might know, GNOME 3.22 got its second and last scheduled point release last month, which also brought us the GNOME Software 3.22.2 maintenance update, but it looks like some bugs needed to be fixed for the graphical package manager used by default in popular GNU/Linux distributions.

And today, we see the GNOME Software 3.22.3 update landing in the stable repositories of various

Linux-based operating systems, including the recently released Fedora 25. Talking about Fedora, it appears that GNOME Software 3.22.3 makes it possible to upgrade two Fedora Linux versions at once.

Source:

<http://news.softpedia.com/news/gnome-software-3-22-3-lets-users-upgrade-two-fedora-linux-versions-at-a-time-510663.shtml>

REFRACTA 8.0 IS A PINT-SIZED POWERHOUSE

Refracta is a somewhat obscure Linux distribution that offers exceptional functionality and stability.

Obscurity is not always a bad thing when it comes to Linux distros. You can find some very worthwhile alternatives to your current operating system. Refracta is a big surprise in a small package.

Many look-alike desktop distros are difficult to distinguish from run-of-the-mill garden varieties. Others offer new adopters something unique that makes using them fun and productive.

Refracta is one of the few full-service Linux distros that makes an easy and more convenient replacement for pocket Linux options such as Puppy Linux.

Source:

<http://www.technewsworld.com/story/84129.html>

NEW PHP RELEASE BRINGS ANOTHER SPEED BOOST

The PHP 7 line, which debuted a year ago, has received its first point release upgrade, improving performance and featuring nullable types.

Version 7.1.0 also offers capabilities like a void return type and class constant visibility modifiers. But a key PHP advocate stressed performance. The upgrade "[provides] up to 35 percent better performance in CPU-intensive workloads," said Zeev Suraski, CTO at PHP tools producer Zend.

Nullable types in 7.1 allows a check type to be of some type or null. "Type declarations for parameters and return values can now be marked as nullable by

prefixing the type name with a question mark. This signifies that as well as the specified type, null can be passed as an argument, or returned as a value, respectively," documentation states.

Source:

<http://www.infoworld.com/article/3147300/application-development/new-php-release-brings-another-speed-boost.html>

KDE FRAMEWORKS 5 NOW AVAILABLE AS A SNAP FOR SNAPPING KDE APPS ON UBUNTU LINUX

Long-time KDE Community developer Harald Sitter has been working lately on creating a sharable KDE Frameworks Snap that would make snapping of KDE applications for Ubuntu and other GNU/Linux distros a lot easier and fun.

In a recent blog post, the developer explains how he managed to bundle KDE apps as Snaps while trying to make them as small as possible. The size of the downloadable binary Snap and Flatpak packages, as well as

ApplImage or other similar technology, always appeared to have been an issue for most users.

In order for Snaps and Flatpaks to be adopted by the masses, they need to be smaller, and thanks to the hard work of Harald Sitter, there's now a Snap version of the KDE Frameworks 5 collection of add-on libraries for Qt 5, which KDE developers are using to develop KDE applications for the Plasma 5 desktop environment.

Source:

<http://news.softpedia.com/news/kde-frameworks-5-now-available-as-a-snap-for-snapping-kde-apps-on-ubuntu-linux-510745.shtml>

LINUX LITE 3.2 USERS GET NEW VERSIONS OF LITE SOFTWARE AND TWEAKS, UPDATE NOW

Linux Lite 3.2 has been released, and many users are already enjoying the lightweight distribution on their PCs. The developer is hard at work to improve various parts of the operating system. Lite Software is the graphical package manager in

Linux Lite, used for installing, updating or removing software packages.

Besides adding Internet connection checks for Lite Software and Install Updates, along with clearer descriptions for included apps, Jerry Bezencon also released a new version of the Lite Tweaks utility, another in-house built tool that only Linux Lite users can enjoy.

Source:

<http://news.softpedia.com/news/linux-lite-3-2-users-get-new-versions-of-lite-software-and-tweaks-update-now-510742.shtml>

LATEST TELEGRAM UPDATE BRINGS IFTTT, CONVERSATION PINNING, UPDATED PHOTO EDITOR, AND MORE

Users of Telegram, there's a great update to the app available. This new version brings a few big changes, including some Android-specific ones. The most notable ones for the messaging service as a whole are IFTTT

integration and conversation pinning. Sounds cool, right?

Source:

<http://www.androidpolice.com/2016/12/07/latest-telegram-update-brings-ifttt-conversation-pinning-updated-photo-editor/>

KORORA 25 LINUX RELEASED, BASED ON FEDORA 25, SHIPS WITH CINNAMON 3.2, MATE 1.16

Dubbed Gurgle and based on the recently released Fedora 25 Linux distribution, Korora 25 arrives today, approximately five months after the release of Korora 24 "Sheldon," and ships with up-to-date GNU/Linux technologies and Open Source software projects, including the Linux 4.8 kernel.

Source:

<http://news.softpedia.com/news/korora-25-linux-released-based-on-fedora-25-ships-with-cinnamon-3-2-mate-1-16-510807.shtml>

LINUX FOUNDATION NAMES NETWORKING & ORCHESTRATION CHIEF

The Linux Foundation is announcing Arpit Joshipura has joined the organization's executive leadership team as General Manager, Networking & Orchestration. Joshipura's appointment reflects the growing importance of open source in the networking industry.

The Linux Foundation hosts open source networking projects including OpenDaylight, OPNFV, OPEN-O, FD.io, Open vSwitch, OpenSwitch, IO Visor, ON.Lab, CORD and ONOS. Through these projects and related initiatives, The Linux Foundation is bringing together hundreds of developers, DevOps professionals and business executives from around the world to undertake this massive transition and to change an industry.

Source:

<http://www.lightreading.com/open-source/industry-bodies-groups/linux-foundation-names-networking-and-orchestration-chief/d/d-id/728891>

AMD STRENGTHENS GAMING AND VR ON LINUX WITH GRAPHICS IMPROVEMENTS

Windows is the indisputable platform of choice for gaming and VR, but Linux is catching up fast as graphics companies ramp up driver and hardware support for the OS.

AMD is showing more love for Linux than ever before. The company announced hardware and driver updates that will strengthen gaming and VR on the OS.

The biggest news is AMD's support for FreeSync on Linux PCs. FreeSync can improve the rendition of games and high-definition video by allowing GPUs to communicate directly with displays, reducing image stutter and lag time. Images are drawn up on the screen while they are being rendered in GPUs.

Source:

<http://www.pcworld.com/article/3148313/components-graphics/amd-strengthens-gaming-and-vr-on-linux-with-graphics-improvements.html>

LINUX KERNEL 4.8.14 HITS THE STREETS WITH NUMEROUS NETWORKING IMPROVEMENTS & MORE

Linux kernel maintainer Greg Kroah-Hartman announced the release of Linux kernel 4.8.14, the fourteenth maintenance update to the most advanced kernel series.

Linux kernel 4.8.14 is here only days after the December 8 release of Linux kernel 4.8.13, which wasn't a big patch. However, it looks like today's update brings some more improvements, and according to the appended shortlog and the diff since the previous version, it changes a total of 56 files, with 388 insertions and 164 deletions.

Linux kernel 4.8.14 is all about networking improvements, as it updates the networking stack with a bunch of changes and fixes to the Datagram Congestion Control Protocol (DCCP), Distributed Switch Architecture (DSA), IPv4, IPv6, Layer 2 Tunneling Protocol (L2TP), Netlink, packet scheduler, and Transparent Inter-process Communication (TIPC) implementations.

Source:

<http://news.softpedia.com/news/linux-kernel-4-8-14-hits-the-streets-with-numerous-networking-improvements-more-510874.shtml>

UBUNTU-BASED KDE NEON USER LTS EDITION DISTRO OUT WITH PLASMA 5.8 LTS

The development team behind the KDE Neon GNU/Linux distribution have announced the availability of an LTS (Long Term Support) flavor of the KDE Neon User Edition operating system.

As you might know, KDE Neon is usually distributed as User Edition and Developer Edition 64-bit Live ISO images. While the former is shipping with the latest stable KDE Plasma, Frameworks, and Applications releases, the latter is targeted at developers and bleeding-edge users who want to test drive the pre-release versions of these technologies.

Source:

<http://news.softpedia.com/news/ubuntu-based-kde-neon-user-lts-edition-distro-out-now-with-kde-plasma-5-8-lts-510887.shtml>

POPULAR CENTOS LINUX SERVER GETS A MAJOR REFRESH

CentOS doesn't get many headlines. But it's still the server Linux of choice for many hosting companies, data centers, and businesses with in-house Linux experts. That's because CentOS, which is controlled by Red Hat, is a Red Hat Enterprise Linux (RHEL) clone. As such, it reaps the benefits of RHEL's business Linux development efforts without RHEL's costs.

So, now that CentOS 7 1611, which is based on RHEL 7.3, has arrived, one expects to see many happy companies moving to it.

Source:

<http://www.zdnet.com/article/popular-centos-linux-server-gets-a-major-refresh/>

CANONICAL'S SNAPD 2.19 SNAPPY DAEMON LAUNCHES FOR UBUNTU CORE 16 & UBUNTU 16.04

Snapd 2.19 is here almost three weeks after the release of Snapd 2.18 and only one week after its first maintenance update, version 2.18.1. According to the release notes, which we've attached at the end of the article for your reading pleasure, Snapd 2.19 is a major update implementing numerous improvements and new features.

Prominent new features include support for classic confinement, the merge of snap-confine into snapd, the ability to display the last refresh time, support for parsing and exposing snap.Info aliases, move to xdelta3 as default delta format for the Snappy Store, as well as AppArmor support for classic confinement to the interfaces.

Source:
<http://news.softpedia.com/news/canonical-s-snapd-2-19-snappy-daemon-released-for-ubuntu-core-16-ubuntu-16-04-510919.shtml>

FIREFOX 50.1.0 LANDS IN UBUNTU'S REPOS, MULTIPLE SECURITY VULNERABILITIES FIXED

Mozilla released the Firefox 50.1.0 web browser a couple of days ago, and it looks like they patched a total of 13 security vulnerabilities, which could have been used by an attacker to crash the application or run programs as your login if the users were to open a malicious website.

Canonical urges users of the popular Linux OS to update the Mozilla Firefox packages as soon as possible. Firefox 50.1.0 is now available in the stable software repositories of the Ubuntu versions mentioned above, so make sure that you run a full system update to install it.

Source:
<http://news.softpedia.com/news/firefox-50-1-0-lands-in-ubuntu-s-repos-multiple-security-vulnerabilities-fixed-510952.shtml>

DOKY BECOMES LINUX FOUNDATION GOLD MEMBER

The Linux Foundation announces Doky has become a Gold member of The Linux Foundation. Doky is an online-based operating system, providing unique features such as a seamless cloud collaboration and storage solution and a quickly growing, fully integrated set of virtual desktop apps. Doky calls its service "fluid computing."

Doky offers a free web and mobile platform that can replace the functions of a local computer, allowing users to access their desktop, data, tabs and more securely from any computer, anywhere, anytime.

Source:
<https://finance.yahoo.com/news/doky-becomes-linux-foundation-gold-170000447.html>

NVIDIA 375.26 LINUX GRAPHICS DRIVER IS OUT, LEGACY ONES SUPPORT XORG SERVER 1.19

Nvidia released a bunch of updated graphics drivers for UNIX platforms, including GNU/Linux on 64-bit, 32-bit and ARM, as well as FreeBSD and Solaris operating systems.

Nvidia 375.26 is out as the latest long-lived branch, which means that it's recommended for all users running a previous version of the graphics driver on their Linux, BSD, or Solaris distributions. This release resolves numerous issues reported by users lately, and adds initial support for Nvidia Quadro M3000 SE GPUs.

Source:
<http://news.softpedia.com/news/nvidia-375-26-linux-graphics-driver-is-out-legacy-ones-support-xorg-server-1-19-510981.shtml>

CENTOS LINUX 7.3 NOW AVAILABLE FOR ARM ARCHITECTURES, SUPPORTS RASPBERRY PI 3

CentOS developer Fabian Arrotin announced the release and general availability of the CentOS Linux 7 (1611) images for ARM (armhfp) hardware architectures.

The big news comes just two days after the release of the CentOS Linux 7 (1611) updated installation mediums for 64-bit platforms, which have been rebased on the upstream source code of the Red Hat Enterprise Linux 7.3 operating system from Red Hat Inc. CentOS Linux 7 (1611) port for ARM is a welcome addition to the growing list of GNU/Linux distributions for single-board computers and embedded devices.

Supporting the popular Raspberry Pi 3, Raspberry Pi 2, Banana Pi, CubieTruck, and Cubieboard SBCs, CentOS Linux 7 (1611) userland for armhfp includes some exciting technologies, among which we can mention Linux kernel 4.4 LTS, updated uboot images to version

2016.09, replacements of the unmaintained rootfs-resize package with cloud-utils-growpart, SELinux support for Raspberry Pi 2 and 3 devices.

Source:

<http://news.softpedia.com/news/centos-linux-7-3-now-available-for-arm-architectures-supports-raspberry-pi-3-510982.shtml>

SEMICODE OS — NEW LINUX DISTRO FOR PROGRAMMERS AND WEB DEVELOPERS

SemiCode OS is a Linux distribution developed specifically for programmers and web developers. Based on Ubuntu 14.04, it uses the familiar GNOME desktop environment and comes preloaded with a good selection of developer tools. The early beta version, SemiCode OS v0.1, is available for download and testing.

If we take a look at the vast list of various Linux distributions, there are specialized solutions for hackers, power users, artists, and gamers. But, there's a dearth of

distros that claim to serve the unique needs of programmers, probably, because most Linux-based operating systems are customizable and a developer can install all the useful tools in no time.

Source:

<https://fossbytes.com/semicode-os-linux-distro-programmers/>

CONSUMERS NOT TAKING IoT SECURITY SERIOUSLY

Most UK consumers are vulnerable to cyber-attacks because they do not perform vital firmware updates on their PCs and connected devices.

An IoT security survey from software provider Canonical found that only 31% of consumers carry out firmware updates regularly and perhaps most surprising of all, as many as 40% of those who own connected devices have never performed any kind of firmware update on them.

According to the Canonical survey, most users feel that it is not their responsibility to keep the firmware of their devices up-to-

date.

Almost half of those questioned in the survey were unaware connected devices in the home, such as Wi-Fi routers, could be used to attack other devices, spy on their owner or bring down websites.

Source:

<http://www.electronicweekly.com/news/consumers-not-taking-iot-security-seriously-2016-12/>

LINUX MINT 18.1 'SERENA' IS HERE FOR CHRISTMAS! WILL YOU INSTALL THIS OPEN SOURCE HOLIDAY GIFT?

Linux Mint is an operating system that I simultaneously love and hate. I love it because it makes Linux easy to use for home users. I sometimes hate Linux Mint because it is essentially just a tweaked version of Ubuntu -- I'd rather see users choose Canonical's OS as intended. True, Mint's tweaks are actually very good, but I am not sure it warrants an entirely different operating system -- even if the final product is rewarding.

But OK, if you love Linux Mint and use it regularly, I have very good news -- version 18.1 'Serena' is finally here. Yes, Santa Claus has delivered an early Christmas gift! There are two desktop environments from which to choose -- Cinnamon and Mate. Thankfully there is no KDE version to further confuse things, but I digress. Will you download Linux Mint 18.1?

Most users will want to target the Cinnamon desktop environment version of the operating system, as it offers a more modern appearance with greater eye candy. Don't get me wrong, Mate has its place too -- ideally on machines with lower-end hardware -- but some folks with high-end machines prefer the simpler design. Different strokes for different folks, as they say. Right, Willis?

Linux Mint 18.1 comes with the updated Cinnamon 3.2 which looks to be wonderful. The Mint team touts a new screensaver/ login screen in the desktop environment, and yeah, it looks good. I know what you are thinking -- does that matter? Uh, yeah! All

the little things add up to the overall user experience.

Source:

<http://betanews.com/2016/12/16/linux-mint-18-1-serena-christmas-open-source-mate-cinnamon/>

DEBEX LXQT LINUX OS NOW BASED ON DEBIAN 9 AND LXQT 0.11.0, POWERED BY KERNEL 4.9

DebEX LXQt (also known as DebEX Barebone) Build 161209 is now the most advanced version of the Linux-based computer OS. It's rebased on the Debian GNU/Linux 9 "Stretch" operating system, which is still in development and should hit the streets in early 2017, and the recently released Linux 4.9 kernel.

The newest LXQt 0.11.0 desktop environment is included as well, and DebEX LXQt now ships with the Nvidia 375.20 proprietary graphics driver for an out-of-the-box Nvidia GPU experience. As expected, all the pre-installed packages have been updated to their latest versions as of December 9, 2016.

Also new in DebEX LXQt Build 161209 is the addition of Refracta tools, a collection of utilities that make it easier for anyone to build their own Live CD/DVD ISO images based on the DebEX Barebone operating system and using the Debian Testing packages. Additionally, the Google Chrome web browser was replaced with Tor Browser.

DebEX LXQt Build 161209 replaces Build 161025, which shipped with the Xfce 4.12 desktop environment.

Source:

<http://news.softpedia.com/news/debex-lxqt-linux-os-now-based-on-debian-9-and-lxqt-0-11-0-powered-by-kernel-4-9-511021.shtml>

BLACK LAB LINUX 8 NOW READY FOR DOWNLOAD, BASED ON UBUNTU 16.04

What that means exactly for end users is that there will be a 45-day waiting period before you can freely download a new release of the GNU/Linux distribution after its official announcement. As such, the latest

version, Black Lab Linux 8.0, was released on November 10, 2016, but only now is available for download, a bit early than expected though.

While Black Lab Linux 8.0 "Onyx" did not arrive on the 1st of November, as initially planned, the developers kept their word and published the download links on December 15, as promised, and you can grab the Live ISO images with GNOME, KDE, Unity, Xfce, LXDE, and MATE desktop environments right now through our website, but please note that it's only supported on 64-bit machines.

The OS is based on the Ubuntu 16.04 LTS (Xenial Xerus) operating system, ships with Linux kernel 4.4 LTS, and offers various modern functionalities, such as full UEFI and exFAT support, Google Drive integration, systemd and Upstart support, along with the latest versions for the pre-installed applications.

Source:

<http://news.softpedia.com/news/merry-christmas-black-lab-linux-8-now-ready-for-download-based-on-ubuntu-16-04-511013.shtml>

REMOTE CODE EXECUTION BUG FOUND IN UBUNTU QUANTAL

A remote code execution bug has been patched in the default installation of Ubuntu Desktop affecting all default installations of Quantal version 12.10 and later. According to researcher Donncha O’Cearbhaill, the bug allows for code injection when a user opens a specially crafted malicious file. The flaw is tied to the default file handler used by Ubuntu that determines what programs open which file formats. O’Cearbhaill privately disclosed the vulnerability on Dec. 9 and a patch was made available Wednesday.

O’Cearbhaill said that when Ubuntu’s default file handler was called upon to launch Appport, the operating system’s default crash handler and reporting software, it handles those requests in a unique way that could create conditions exposing the OS to remote code execution. Under those conditions, he said, the Appport crash file descriptor (or report fields) has a byte pattern that could be used to

create an exploitable file. That’s because when an unknown file crashes, Appport parses the crash files and displays a pop-up message to users indicating a crash occurred with the option to “show details.” Within that context an attacker could plant malicious crash files or .pyfile files on the OS that can trigger take advantage of the vulnerability.

Source:

<https://threatpost.com/remote-code-execution-bug-found-in-ubuntu-quantal/122561/>

CANONICAL RELEASES SNAPCRAFT 2.24 SNAP CREATOR TOOL FOR UBUNTU 16.04 AND 16.10

Snapcraft 2.24 arrives approximately two weeks after the 2.23 milestone, and it looks like it’s yet another big release that adds many cool new features, especially those that have been implemented in the 2.19 build of the Snapd Snappy daemon, such as classic confinement support and the ability to build classic Snaps.

The pluginhandler component

received some attention in Snapcraft 2.24, adding prepare, build, and install scriptlet support, along with support for in-snap libraries instead of using the system ones. Moreover, the get_build_properties() function was implemented in the Maven, Gradle, CMake, WAF, and SCons plugins.

Among other noteworthy features added in the Snapcraft 2.24 release, we can mention the implementation of the “[list-]registered” command for listing registered Snaps, idempotent store installs for tests, support for downloading and validating packages on branded stores, and unittests improvements for the ARMhf hardware architecture.

It also looks like many of the supported sources have been refactored into modules, including Bazaar, DEB, Local, Git, Base, Mercurial, RPM, Tar, Subversion, ZIP, and Script. A more stable FTP source is now used for tests, “aliases” support was added to “apps,” and the parser now uses the same version method as “snapcraft.”

Last but not least, testtools are

now being used as the base of all unit tests, origin-`{branch,commit,tag}` support was added to the parser, the Rust plugin has been updated to fetch dependencies in pull, a source value was implemented to the error message, and plugins can now be an alias of list-plugins.

Source:

<http://news.softpedia.com/news/canonical-releases-snapcraft-2-24-snap-creator-tool-for-ubuntu-16-04-and-16-10-511074.shtml>

AFTER IGNORING LINUX FOR YEARS, ADOBE RELEASES FLASH 24 FOR LINUX

Adobe has just released the first final Adobe Flash Player stable release, Flash Player 24, for GNU/Linux in years.

The company announced back in September 2016 that it would bring back Flash for Linux from the dead. This came as a surprise as it had ignored Linux for the most part when it comes to Flash.

Adobe promised back then that it would provide a Linux version of Adobe Flash Player that would be

in sync with the company's regular Windows and Mac releases of Flash Player.

A beta release of Flash 23 was released at the time with the promise that a final version would be made available.

This beta version was only available through the Adobe Labs website. Once installed on a device running Linux, browsers like Firefox or Pale Moon would pick up the plugin automatically giving users options to run most Flash content on the Internet.

Most? Adobe stated back then that the Linux version of Flash Player would not support some features, GPU 3D acceleration and support for premium video DRM for instance. The company recommended the Chrome web browser and its integrated version of Linux for that as it does not have that limitations.

Source:

<https://www.ghacks.net/2016/12/18/after-ignoring-linux-for-years-adobe-releases-flash-24-for-linux/>

LINUX MINT 18.1 OS RELEASED OFFERING SUPPORT UNTIL 2021

A new version of the Mint Linux operating system has been released this week as Linux Mint 18.1 which brings with it plenty of new features for users to enjoy as well as refinements to make the desktop experience even more comfortable to use.

As well as a wealth of new features Linux Mint 18.1 will also be supported until 2021 and comes with a choice of either Cinnamon or MATE desktop environments both of which includes a wealth of updates for the 18.1 release.

Linux Mint 18.1 Cinnamon includes a new version of the desktop environment with a new screen saver, new animations, and other visual tweaks. There's also support for auto-rotation on tablets or other computers with accelerometers, support for vertical panels (letting you put the panels on the left and right sides of the screen instead of the top and bottom, and updated apps.

Linux Mint 18.1 MATE has many

of the same app updates and improvements to the underlying code of the operating system, but updates to the MATE desktop operating system are more modest. It now uses DuckDuckGo instead of Google as the default search engine in the MintMenu application, and several key features have been switched to GTK3.

Source:

<http://www.geeky-gadgets.com/linux-mint-18-1-os-released-offering-support-until-2021-19-12-2016/>



The Ubuntu Podcast covers all the latest news and issues facing Ubuntu Linux users and Free Software fans in general. The show appeals to the newest user and the oldest coder. Our discussions cover the development of Ubuntu but aren't overly technical. We are lucky enough to have some great guests on the show, telling us first hand about the latest exciting developments they are working on, in a way that we can all understand! We also talk about the Ubuntu community and what it gets up to.

The show is presented by members of the UK's Ubuntu Linux community. Because it is covered by the Ubuntu Code of Conduct it is suitable for all.

The show is broadcast live every fortnight on a Tuesday evening (British time) and is available for download the following day.

podcast.ubuntu-uk.org



Over the course of this last month, I've helped to take numerous photographs of hats for my mother, who is a milliner. In doing so, I've found a good set of tools for tethered shooting (controlling the camera via a computer), removing backgrounds, and, in general, enhancing shots a little. I previously used the Windows and OSX-only Adobe Creative Cloud, which I no longer pay for. So, I needed to find a new approach.

TETHERED SHOOTING

For this, I investigated a few options - Darktable being the most familiar-looking. Unfortunately, it didn't work with the Canon EOS 400D (a.k.a. Rebel XTi). After a bit more researching, I discovered gphoto2. This is a command-line tool that lets you remotely take photos - even setting frames and intervals. Perfect for taking both normal and timelapse photos. Some features work with only certain cameras, but the tool will tell you when you try to use it.

How I used it was pretty simple - I simply ran:

```
gphoto2 --capture-image-and-download --filename="IMG.JPG"
```

This resulted in the image (IMG.JPG) in the current working directory. I updated the filenames as I took photos, but, if you set up intervals, or take a batch of photos at once, it will auto-increment. By default, photos are called capt0000.jpg. It also offers a few preview options, though my camera didn't support it. Instead, I simply use the viewfinder to adjust the zoom/focus, and relied on my tripod to keep everything steady between shots. Once the photo was taken and downloaded, I checked it and either moved on to the next hat, or took another photo.

Overall, this was pretty painless, and felt easier and quicker to me than Lightroom did. If you don't like the command-line, you may not appreciate this tool, but I would still recommend giving it a shot. If you find yourself using

the same options over and over again, a small bash script could cut down on what you're typing.

BACKGROUND REMOVAL

The photos we took were taken on a black backdrop, which worked pretty well. However, if the photos are later used for an online shop, or if we find the background too dark, I wanted to investigate background removal - so we could swap out the background for something lighter. I was looking for a quick and easy solution, as opposed to using something like the GIMP and the foreground select tool. Unfortunately, the only such options I found were either Windows or macOS-only, or an online tool with a credit-based payment plan (for downloading the results). If you don't mind paying for a tool and running it on another computer/OS, or are okay with paying for credits to download the photos from an online tool, you can check out: <https://autoclipping.com/> <https://clippingmagic.com/> PhotoScissor (software)

Super PhotoCut (macOS-only)

For those of us not able (or willing) to take those approaches, we have a few limited options. Either we can use GIMP, or ImageMagick, to remove the backgrounds.

USING IMAGEMAGICK

If you're planning to use ImageMagick, I would recommend taking the time to take an empty background photo. The reason for this is because ImageMagick can find the difference between two photos, and remove anything the same (i.e. the background). For the process, you can visit here. Unfortunately, I can't use this approach, as I don't have a background photo of the setup, and the lighting conditions varied from day to day.

There are a variety of approaches you can use. If you have a relatively simple background, there are a few things you can do. For this example, I'm going to remove the textured

background from an ArchLinux wallpaper I had lying around.

The original image:



Generating a difference mask:

```
convert walmfmzzz.jpg \(
+clone -fx 'p{0,0}' \)
-composite Difference
-composite -modulate 100,0
-alpha off difference.png
```

Turning the mask into a threshold map:

```
convert difference.png
-threshold 25%
boolean_mask.png
```

Note: play with the threshold here in order to reduce the selection to just the object you want.



Overlay the map to the original image, and remove the background.

```
convert walmfmzzz.jpg
boolean_mask.png -alpha Off
-composite CopyOpacity
-composite
walmfmzzz_threshold.png
```



As you can see, it removed all of the background, and the object itself (the Arch logo) is still in pretty decent shape. You could now place it on a different background, or colorify just the object and place it back onto the original image. Unfortunately, I couldn't get this approach working for more complex backgrounds.

GIMP

The process here is tedious, and not very effective (in my experience at least). There are a variety of ways to do it. There is a foreground select tool, where you can outline the object you want to keep, and it will do its best to give

a good selection of it (which has never worked well for me). Or you can duplicate the layer, make it grayscale, and then play with levels or a paintbrush, until the object you want to keep is painted white, and everything else is black. Then create a layer mask on the original image layer, and copy & paste the grayscale layer into the mask. It should result in an okay cut-out of the object. Afterwards, you can zoom in and slowly paint anything in black or white with a small brush that should be transparent or visible.

I don't find this process to be an effective way to remove backgrounds for anything besides a single photo here and there, and it is extremely tedious when you have complex backgrounds - I often end up with a halo of visible background around the object, or else I get jagged edges from trying to paint it out.

CONCLUSION

Gphoto2 is a wonderful solution for tethered capture - but unfortunately, I haven't found an approach to removing backgrounds that is as quick and

easy as the paid options I listed above. Depending on your preparation and the background you want to remove, you may be able to automate the process to some degree with ImageMagick.

Do you know of a better way to do this? If so, I would be thrilled to hear about it. Feel free to email any questions, suggestions, or general comments to me at lswest34+fc@gmail.com.



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.



HOW-TO

Written by Greg D. Walters

Python In The Real World - Pt 73

Welcome back to our continuing journey to control our world using Python, the Raspberry Pi, and microcontrollers like the Arduino Uno. In this leg of our journey, we will be learning the basics of the Arduino.

This requires us to have a basic understanding of the Arduino and the Arduino programming language, which, unfortunately, is NOT python, but based on the C language. The good news, however, is that it won't take you long to get the hang of it, and we won't have to get too deep into it for the things we will be doing.

THE ARDUINO MICROCONTROLLER

The Arduino (quoting from the Arduino.cc website) is an open-source electronics platform based on easy-to-use hardware and software. It was released as open-source hardware and software, meaning that the plans and parts list are available for you to make

your own Arduino from scratch.

Basically, it allows you to read inputs and control output pins on the board in a process very similar to the GPIO pins on the Raspberry Pi.

You can get the genuine Arduino boards for around \$35 USD, but there are good clones out there (especially the Sparkfun Red Board) for around \$20 USD.

There are two boards that I would suggest for our projects. The UNO and the MEGA. shown top right is a breakdown of the two.

Depending on your desire to go beyond our basic projects, you might want to consider going with the Mega board.

Bottom right is an image of a "standard" (albeit dusty) Arduino Uno board.

Open the Arduino IDE and select File | Examples | 01.Basics | Blink . This will cause another

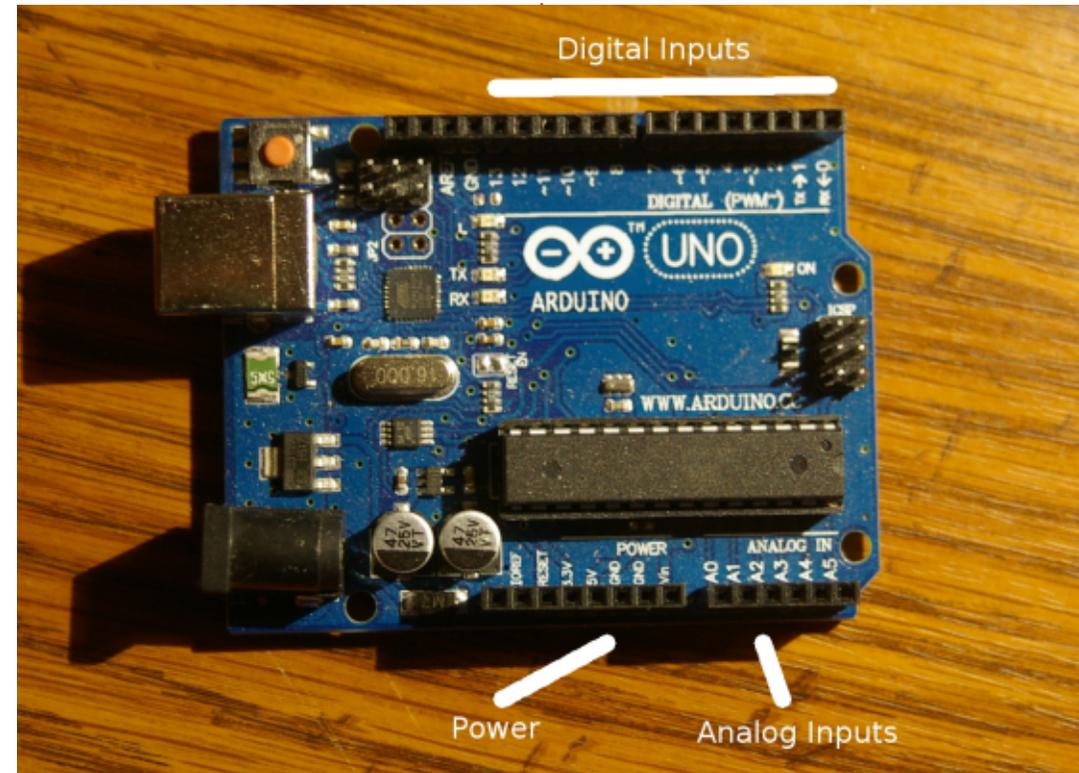
	UNO	MEGA
Digital Pins	14	54
PWM Pins	6	16 (counted in Digital Pins)
Analogue Pins	6	16
Clock Speed	16Mhz	16Mhz

window to open with the new source code. I've copied it here (next page) so we can discuss this very simple project.

Of course, the first thing you will notice is that the source code

is in the C programming language. Not to worry, it's pretty simple for what we will be doing.

The part at the top is a block comment which starts with the `/*` and ends with the `*/`. Like



Python, the C compiler ignores these block comments. The lines that start with `/**` are single inline comments and can be put anywhere in code. However, once the compiler sees the `/**`, everything else on that line is ignored.

There are two functions that must be included in every project... the setup function and the loop function. You can write your own, but there must be these two. The setup function runs every time the board is powered on, or the reset button is pressed. Once the setup function finishes, the loop function is called (at least in this example), and it runs continuously doing all the steps within it.

In this setup function, we only have to tell the board that pin number 13 will function as an output pin. On the Uno and Mega, there is an onboard LED that is connected to pin 13, so we will be controlling that, as well as the actual pin, and not have to worry about any external components this time.. In the Loop function, we send, via the `digitalWrite` function, a High signal turning the LED on, wait 1 second (using the `delay` function), set it back to a low signal

```
/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.
  Most Arduinos have an on-board LED you can control. On the Uno and
  Leonardo, it is attached to digital pin 13. If you're unsure what
  pin the on-board LED is connected to on your Arduino model, check
  the documentation at http://www.arduino.cc
  This example code is in the public domain.
  modified 8 May 2014
  by Scott Fitzgerald
*/
// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin 13 as an output.
  pinMode(13, OUTPUT);
}
// the loop function runs over and over again forever
void loop() {
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(1000);           // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(1000);           // wait for a second
}
```

turning off the LED, wait another second, and then start the process all over.

Plug your Arduino board into the USB port of your computer and click on the round check-mark button to compile and verify your code. Once it reports that the compile has completed successfully, click on the button next to it (the one with the arrow pointing to the right) to upload your code to the Arduino board. In a few moments, if everything worked well, you should see the

LED on the Arduino start to flash on and off in one-second cycles.

If you got any error messages on the upload, check the settings under the Tools menu item. The board needs to be set to the type of board you are using, Port should be the one connected to the Arduino (which is USUALLY sensed for you).

Now let's start to have a little fun modifying this code. The `delay` function takes one parameter, which is the number of

milliseconds to delay. In this case we are waiting 1000 milliseconds, which is one second. Let's change both of the `delay` calls to 250 milliseconds and see what happens.

```
delay(250);
```

Don't forget to end the statement with a semicolon. Click on the check button (re-compile) and then upload to the board.

Hopefully it is now blinking twice a second.

Now let's get a bit more creative. Let's make the board blink in Morse Code the SOS signal. That is three short blinks, a bit of delay, three long blinks, a bit of delay and three more short blinks. I won't try to get fancy at this point, but will simply copy and paste more digitalWrite and delay calls with the appropriate delays. Here is the modified loop function.

Compile and upload the code.

Next time, we will start working with some of the components we used in the earlier Raspberry Pi projects, so grab some LEDs and resistors from your component archives to be ready.

Until then, play with some of the sample projects that you find in the Arduino IDE and have fun.

```
void loop() {
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(150); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(150); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(150); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(150); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(150); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(1000); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(500); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(150); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(500); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(150); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(500); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(1000); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(150); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(150); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(150); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(150); // wait for a second
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(150); // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(2000); // wait for a second
}
```



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.



HOW-TO

Written by John Kerr

LaTeX Export With Zim

LaTeX can be found in the most surprising places. It is not only the ability to compose in LaTeX that can be found, it is the ability to export data in a *.tex file which is then compiled to produce the pretty .PDF file. The financial package Grisbi can do that, as well as Gnumeric. It is not uncommon. I have seen others, they just do not come to mind right now. However the programs export only the .tex file, we need the rest of the LaTeX packages to compile.

The ability to do a .tex export of files can be found in the desktop Wiki application called Zim. You can find Zim in the Ubuntu repositories. I found Zim one day when I was just skimming through the lists of software as they are found in the Synaptic Package Manager, and I thought that Zim looked interesting. Here is the description from Synaptic:

“Zim is a graphical text editor used to maintain a collection of wiki pages.

“Each page can contain links to

other pages, simple formatting, and inline images. Pages are stored in a folder structure, like in an outliner, and can have attachments. Creating a new page is as easy as linking to a nonexistent page.

“All data is stored in plain text files, with wiki formatting. Various plugins provide additional functionality, like a task list manager, an equation editor, a tray icon, and support for version control.

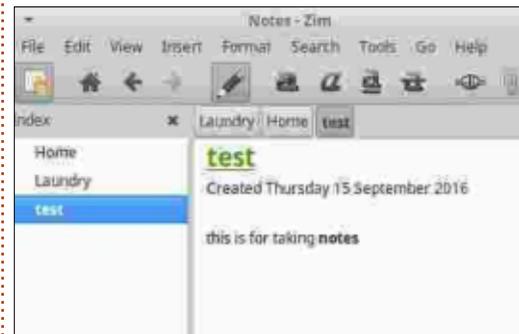
“Zim can be used to:

- * Keep an archive of notes*
- * Take notes during meetings or lectures*
- * Organize task lists*
- * Draft blog entries and emails*
- * Do brainstorming”*

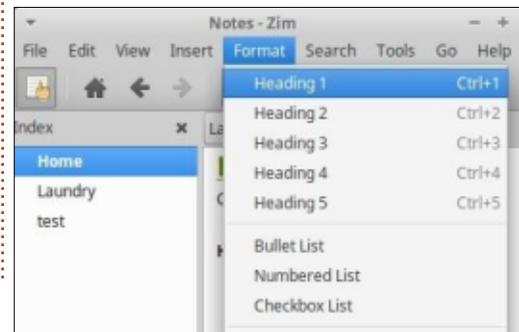
So, all that I was expecting was a text editor that would permit me to link to my files. An editor and some kind of organiser. File format exporting in LaTeX, HTML MHTML, RST or Markdown is not mentioned, this is a bonus that I found later. In fact, the more I looked into Zim, I realised that this application was much more than as

advertised in Synaptic.

Zim looks like any other text editor, with text formatting such as bold, italic, underline and strike-through. The top menu bar also has a link icon, an attachment icon, and a calendar icon that will start a journal section on your Index column as soon as you click on a day in the calendar.



As for page formatting, click on the Format menu and we find just about everything we need for everyday documents and more:



Zim is full of surprises, and, hang on, I will get to LaTeX in a few minutes. Under the Edit menu we find Templates, where we can select a template to use for the way Zim looks when you open it, and a choice of six HTML templates. We can choose from three LaTeX document styles, default Markdown, and RST. But wait! There is more! In the Templates menu there is a link to get more templates online at: <https://github.com/jaap-karsenberg/zim-wiki/wiki/Templates>.

Another Pleasant Surprise: Third-party html export templates There are export templates that will allow you to export your files as a complete Wiki in HTML format. This feature enables us to run an instant website on something as small as a Raspberry Pi. The following is a cut and paste from the Zim web site:

EIGHT-FIVE-ZERO

A template for exporting

HOWTO - LATEX EXPORT WITH ZIM

content from the Zim program as a website. It is designed to be responsive for viewing in all devices. Specifically, it is designed as "mobile-first," (dropping navigation to the bottom of the screen), and will enable right-side navigation only if the device is of significant width and in landscape mode. Available on github (<https://github.com/jrm4/Eight-Five-Zero>)

ECODIV-RESPONSIVE

Template to export your Zim notebook as a responsive/adaptive website that can be viewed in desktop and mobile devices alike. You can find more information, or download the template, on this github page (<https://github.com/ecodiv/Ecodiv-responsive>). For an example, see <http://ecodiv.org/> and <http://notebook.ecodiv.org/>

ECODIV-MOBILE

Template to export your Zim notebook as a website with mobile theme. Build with jquerymobile to create a website with a focus on mobile devices, but which will also look good on the desktop. The

template offers some pointers to customize the design to fit the user's need. For more information, or to download the template, go to the github page (<https://github.com/ecodiv/Ecodiv-mobile>).

LATEX EXPORTING

Yes it is about time I got to this. Here is a short entry I made to Zim:



- To export this as a LaTeX file:
- Click on File >Export >Single Page
 - Forward
 - Under Format select LaTeX
 - Choose a template
 - Forward
 - Give the output file a name and or select the directory it is to go into
 - Click OK

Copy the .tex file in whole or part into your LaTeX editor, You will need to provide the preamble. There may be gremlins and you may have to make some edits such as:

- Remove the [1] from the first line.
- Replace any " or ' using your LaTeX editor.
- Any words that have capitals in the middle of them are treated by Zim as a link. So a word like CanLii will have to be broken up (Can Lii) and the code for the link removed.

Take care of those gremlins and you should have a very nice .PDF file with all of your formatting intact. Your Latex editor will alert you of any changes like this that need to be made.

I would not want to use Zim as

my main LaTeX editor, but it is nice to know that after you have done some work within Zim, you have an option to export in a LaTeX document format that can be imported into an existing document or be a LaTeX document on its own.

I will be using Zim to create an internal website at the law library where I work. Zim automatically saves any edits that you make to the file. I like this feature – I can't forget to save before closing. To date, it is the best organiser, note taker, journal creator, and back up LaTeX editor, that I have found.

Zim is the creation of Jaap Karsenberg . Thank you Jaap.

This article was written using Zim, LibreOffice, and Shutter on a Raspberry Pi3.



In this series of articles, I will be building a text-based application with Free Pascal, using its text-based interface for user interaction. This will be combined with other, more modern, technologies such as database access using SQL and Web access with HTTP. The final aim of the project is to demonstrate how Pascal can be used to build a modern application, while avoiding the overhead associated with a graphical interface that uses a widget set such as GTK or Qt.

In the previous part of this series, we put our complete application together using Free Vision for the user interface, Sqlite to create a local database, and CURL and XML to retrieve fresh data from an RSS feed from the Web to update our database. In this part, we will see various ways in which our application can run on a Raspberry Pi.

THE RASPBERRY PI FAMILY AND UBUNTU

The Raspberry Pi family of single-board computers is gaining popularity as an inexpensive means of learning more about computers, about electronics, and how to interface these two worlds together. However, they are actually complete computers in their own right, and with processors starting at a 32-bit, and running at a clock speed of 600 MHz upwards, they can arguably outperform any type of Personal Computer sold up to and including a 1997 Intel Pentium II. So, while having substantially less computational power than a modern desktop, they are still well capable of running an interface such as Free Vision – that was originally designed for computers equipped with the Intel 8086 and 80386 processors.

The Raspberry Pi family is actually based on two different series of processors: the RPi versions A, B, and B+ have a Broadcom System-on-a-Chip (SOC) based on the ARMv6 architecture, while the RPi 2 and RPi 3 models are based on the ARMv7

architecture. This has implications for the operating system, since Ubuntu is available only for the ARMv7 architecture. So, for models RPi 2 and 3, we can download an Ubuntu 16.04 Server image from the official downloads section <http://cdimage.ubuntu.com/releases/16.04/release/>; at the time of writing the latest version was file ***ubuntu-16.04.1-preinstalled-server-armhf+raspi2.img.xz***. This will give us access to the apt command and repositories, and we can install the latest Free Pascal version 3.0 packages as described for a normal desktop or laptop computer.

On the other hand, for the earlier ARMv6 versions of the RPi, we will need to get a Debian (Raspbian) image. Raspbian is a very acceptable alternative for Ubuntu Server, with only two major differences. The first one is the default user (login name: pi / password: raspberry) instead of Ubuntu's (ubuntu/ubuntu). The second is that Debian's repositories provide a slightly older version 2.6 of Free Pascal,

which may present a few changes compared to version 3.0 - though nothing of consequence unless we use the graphical programming environment known as Lazarus.

However, for both versions, we find clues to indicate that the main target of the Free Pascal project is, indeed, the Intel 32-bit architecture. A few of the libraries do not seem to have been carried over correctly to the ARM build. For our project, the only one of note is the XMLReader unit, so we will not be able to implement the RSS reader, while the other libraries (Free Vision, Database and CURL) seem to work correctly. This would no doubt be a minor inconvenience, but one to take into account and check – if the RPi is important for the reader's plans.

In any case, it may be worth noting that programs compiled for the Intel 32- or 64-bit architectures will not work directly on an RPi, since the processor architecture is different and the machine language instruction sets are not compatible. This means a re-

compile will be required. There are two techniques to do so.

- The first is to install the Free Pascal compiler on the target RPi, then simply transfer our Pascal source code files over. They are recompiled on the RPi itself. Once done, the binary files (executable programs) may be copied over to and used directly on further RPi's, since they are now binary-compatible with the ARM processor.

- A second technique may be of interest when compiling applications for a very low-powered platform. Known as cross-compiling, the application is compiled on a more powerful computer such as a desktop, but specifying that output must be in the machine language of the second, low-powered architecture. This is often the case when designing apps destined for mobile phones and tablets. It is also possible to use our desktop to compile for the RPi, however the process is rather involved and documentation is scarce.

Since the RPi has sufficient power to compile its own programs on-board without being too slow about it, I would suggest readers go this route and avoid

delving into cross-compiling.

USING THE RASPBERRY PI DIRECTLY

All generations of the RPi have an output to connect a screen, analog composite video (yellow RCA jack) for versions A and B, and HDMI for all. There is also at least one USB port to connect an external keyboard, so nothing more is needed to use an RPi as a terminal to run a Free Vision program.

The advantage of starting out

from Ubuntu Server or an equivalent version of Debian is that the RPi comes up directly in text mode. The user simply logs in at the console, and starts up the application from the command line.

Applications are quite responsive, even on an earlier B model. The RPi's 512 MBytes of RAM should not be overtaxed, though this will depend on the actual data usage of our program - here, I was getting by on less than 90 MBytes for the operating system and the application altogether. On the other hand, the

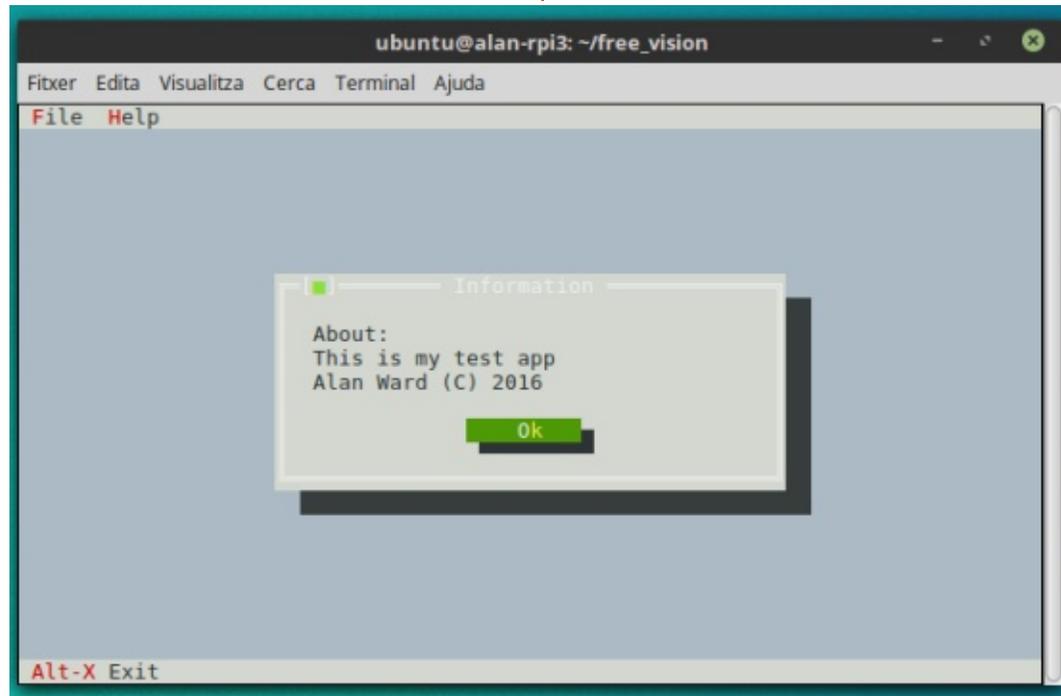
screen image over an analog feed, while working, is not too satisfactory. HDMI should be preferred if at all possible, even if we are working just with a text console.

Depending on the foreseen use of the device, a user could even be automatically logged into the console, and the Free Vision application launched immediately upon login.

THE RASPBERRY AS AN APPLICATION SERVER

One of the nicer characteristics of Free Vision applications is that they work well over an SSH connection. Since our RPi already comes with an SSH server (both in Ubuntu Server and in Raspbian), it can immediately become an application server by simply installing our application's binary file in the user's home directory. One can then SSH over from one's preferred computing device such as a computer or a tablet, and access the application. The low network overhead also helps application responsiveness.

The Raspberry Pi 3 allows us to



HOWTO - PROGRAMMING WITH FREEPASCAL

go one step further, and avoid the need for a physical network connection through the use of the inbuilt WiFi adaptor. To set this up from the command line, we cannot depend on Network Manager that may be familiar to Ubuntu desktop users. Instead, we will need to install wpa-suppllicant by hand - since we are all using WPA encryption by default on our networks, are we not? So:

```
apt install wpasupplicant
```

Now, we need to create a hash of our WiFi's WPA key:

```
wpa_passphrase essid key
```

where "essid" should be replaced with our network's identification, and "key" with the WPA key. This command should reply with the required hash code:

```
# wpa_passphrase myessid
12345678
network={
    ssid="myessid"
    #psk="12345678"

    psk=407c7d4b572bf701afc06ddd6
886cf33ce4f4f2e924d7f12cebe54
628d74013e
}
```

We can now edit file /etc/network/interfaces to make

the WiFi connection come up automatically, each time the RPi is started up. Add lines:

```
auto wlan0
iface wlan0 inet dhcp
    wpa-ssid myessid
    wpa-psk
407c7d4b572bf701afc06ddd6886c
f33ce4f4f2e924d7f12cebe54628d
74013e
```

naturally, replacing these values with your own as appropriate.

The final installation is rather minimal, consisting just of the RPi 3 itself, micro-SD card and a telephone charger for power. It can be placed in a suitable location, but please do make sure it has sufficient ventilation since the more powerful processor on this model can have issues with overheating.

Such a setup would be sufficient for light database work, such as entering a sale or a bill of lading in a business, or data entry on the move for a scientific application. The data entered can then be transferred periodically to a larger computer and be integrated into its database. If large data handling capacities are needed, the RPi can still work as a

front end, but the data repository will need to be moved to a separate database system and accessed over the network.

In this part of our series on using Free Pascal with Ubuntu, we saw various ways in which our application can run on a Raspberry Pi, turning it either into a lightweight terminal or an equally lightweight application server. In the next part, we will focus on what makes the Raspberry Pi unique, and will build a Free Vision

interface to make use of the General Purpose I/O ports on this small board computer.



Alan holds a PhD in Information and the Knowledge Society. He teaches computer science at Escola Andorrana de Batxillerat (high-school). He has previously given GNU/Linux courses at the University of Andorra and taught GNU/Linux systems administration at the Open University of Catalunya (UOC).



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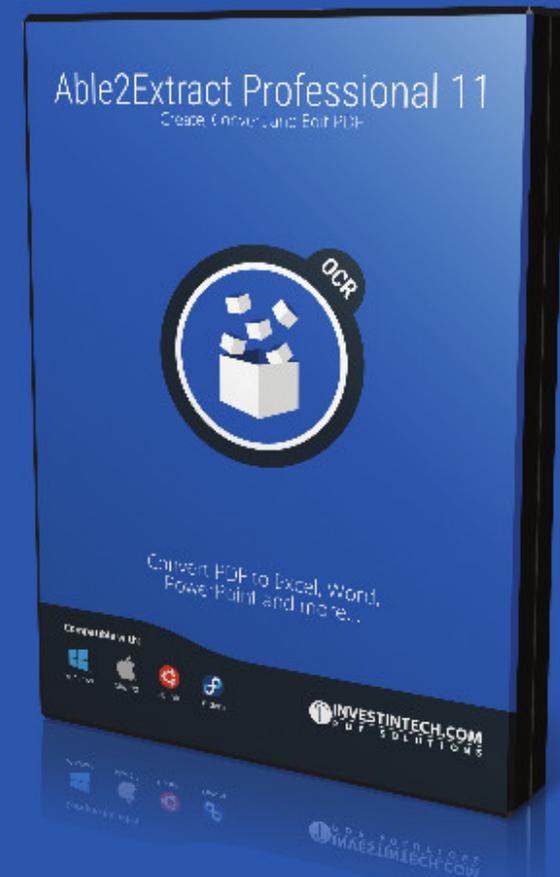
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HOW-TO

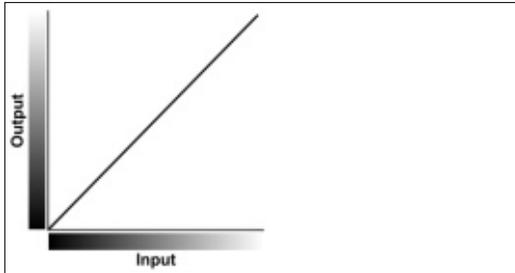
Written by Mark Crutch

Inkscape - Part 56

There's one last filter primitive to visit in this series, which I've kept until last simply because it's a new addition in 0.91, so isn't available to users who are still using version 0.48. The filter is called Component Transfer, and its purpose is to use a function (called a "transfer function") to adjust the distribution of values within each color channel (or "component"). It allows you to adjust brightness or contrast, or to set hard thresholds for posterization effects. As usual, I'll begin by considering the filter's operation on a single color channel, then you can extrapolate from there to how it behaves with three channels plus alpha.

A single color channel of a single pixel is represented by a number from 0 (no color) to 255 (completely saturated). The distribution of the values is linear – ramping up along a straight line – and the default settings for the Component Transfer primitive leave this line untouched. A value of 0 into the filter results in 0 out. 136 in gives 136 out. And so on. This can be represented as a graph,

where the value of the channel coming into the filter is shown on the x-axis, and the value that comes out of the filter is shown on the y-axis.



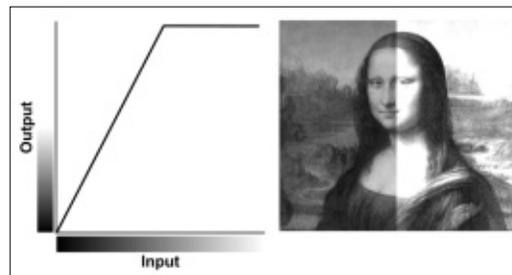
In practice, this primitive maps the input values to a range from 0 to 1 rather than 0 to 255, but the result is the same: with the default settings in the filter ("Identity"), every input channel is mapped to the output without being affected. The purpose of the Component Transfer filter is to play around with that simple 45° graph to let you change the way that input values are mapped to output values.

Basic mathematics tells us that a straight line graph like this can be defined by the slope of the line and the point at which it intercepts with the y-axis. One way to modify

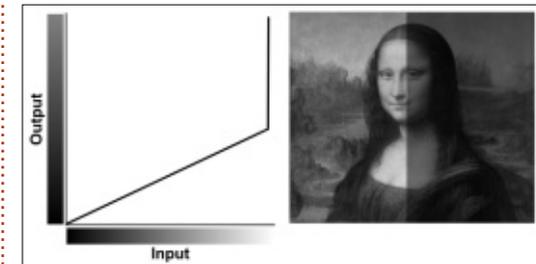
the mapping, therefore, is to alter the slope and the intercept point – a pair of values provided by the "Linear" option in the filter. The identity line has a slope of 1 – that is, for every increase of 1 along the x axis, the y value also increases by 1. By setting it to a value of 2 we can make the slope steeper, causing the output to appear brighter. Here's how it looks for one channel in the filter dialog:



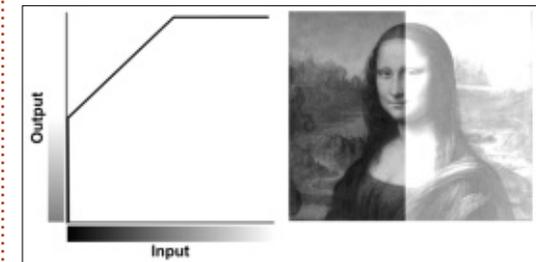
As well as showing the effect on the slope, I've also included a grayscale version of Mona, with the right-hand side showing the result of applying this change to all the color channels:



Changing the slope to a smaller value, 0.5 in this case, reduces the brightness of the image:



By changing the intercept you can alter the contrast of the image; you may also want to tweak the slope to ensure you don't also change the brightness at the same time (unless that's your intention). For example, setting an intercept of 0.5 with a slope of 1 would give you this result:

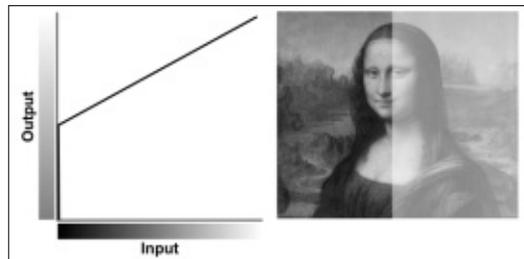


Bear in mind that color channels can't go below 0 or above 127, so the graph changes shape when you hit these limits. As you

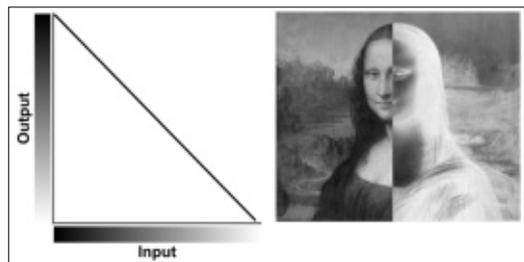


HOWTO - INKSCAPE

can see, it becomes horizontal halfway along the x-axis, washing out any values above 127 by turning them completely white. Compensating for this by changing the slope to 0.5 preserves the detail a lot more, because all 255 input values are mapped, rather than just clamping half of them.

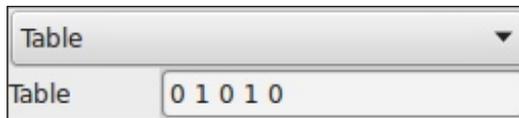


The intercept value can also be negative, to give a darker output, again with reduced contrast. It's worth noting that the slope can also be negative, which inverts the mapping so that larger input values are converted to small output values, and vice versa. With a slope of -1 and an intercept of 1, the output from the channel is completely inverted:

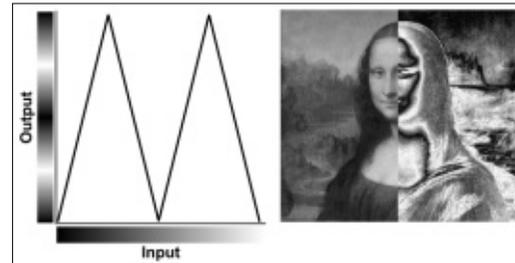


The linear mode of this filter primitive assumes that you want a simple mapping from input to output, to adjust the brightness or contrast by altering the slope and position of a single line. But there are times when a single straight line (even one that flattens out at the limits of the color range) just doesn't cut it. What happens if you want the output to ramp up, then down again, such that values at the extreme ends of the range are mapped to low numbers, whilst those in the middle are mapped to high numbers? For that we have the "Table" mode.

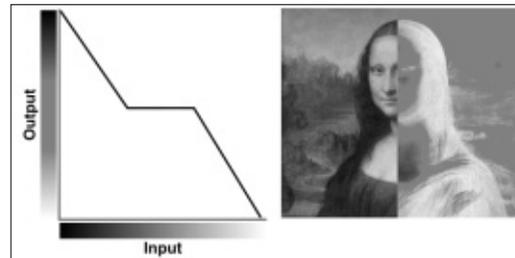
"Table" may be a little misleading, as the table you have to supply is one-dimensional. "List" might have been a better name, but table is what the SVG Working Group decided to go with, and what Inkscape exposes. The numbers in the list represent the start and end values for a series of straight line segments; the number of values in the list determines how many segments there are. For example, the table below has five values (you can use spaces and/or commas to separate them):



These five values give rise to four separate segments in the graph, causing the output values to ramp up and down rapidly as the input varies:



A table consisting of just (0, 1) would be the same as the identity mapping, whereas (1, 0) would invert the image. To flatten a section of the line, use the same value twice in succession: (1, 0.5, 0.5, 0) gives an inverted image where the details in the low and high values are preserved, but the middle third of numbers are all mapped to 127:



As you can see, the input range is divided evenly based on the number of values in your table, and

the line ramps smoothly between them. Sometimes, however, a smooth transition is the last thing you want. Suppose that you have to reduce the number of colors in an image ("posterizing"), or even reduce it down to a stark black-and-white version. For these cases there is the "Discrete" mode.

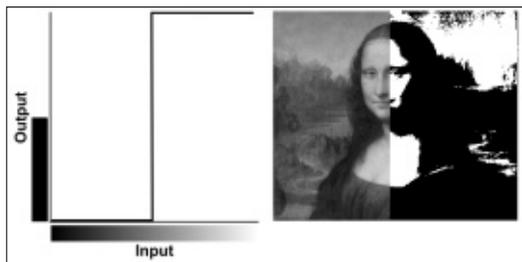
With discrete mode you still provide a "table" of values, but rather than defining start and end points that will be interpolated between, you provide a list of the only output values that are allowed, and Inkscape will map them to sections of the input range. Provide only two numbers and any input value of 127 or less will be mapped to the first value, 128 or greater will be mapped to the second value. Instant monochrome! Provide four numbers and values from 0-63 will be mapped to the first, 64-127 to the second, and so on.

Except there's a bug in Inkscape that prevents it working correctly. In discrete mode the last value in your list is skipped – so if you provide two values expecting to get a monochrome output you'll find that every input value is mapped to the first number, and

HOWTO - INKSCAPE

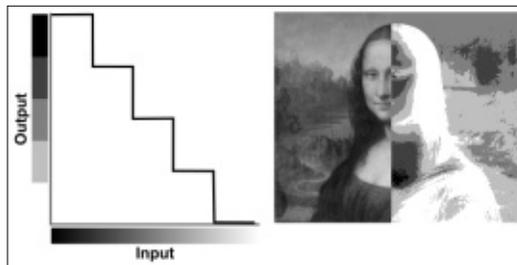
the second is never used. The workaround is obviously to provide three numbers (typically just duplicating the last one), but then the filter will not work correctly in other SVG programs or web browsers. The issue is tracked on Launchpad as bug #1046093, and a fix has been committed for the forthcoming 0.92 release of Inkscape, which is good – but it does also mean that if you provide an extra value to get the filter to work in 0.91, your image will look wrong when you upgrade to 0.92.

For the examples below I've pretended that Inkscape works the way it should – just bear in mind that when I say (0, 1) you should actually use (0, 1, 1) to get it to work on the current release. Speaking of which, here is that monochrome output, using a discrete table containing (0, 1):



This one uses values of (1, 0.75, 0.5, 0.25, 0) to posterize Mona down to five shades of gray, whilst

inverting the output at the same time:



One thing you've undoubtedly noticed about all of the modes so far is that the graphs consist entirely of straight lines – either horizontal ones in the case of Discrete, or angled in the case of Table, Linear and Identity. The last option adds a bit of curvature to the graph, but don't get too excited; it doesn't allow you to draw an arbitrary Bézier curve, but rather just supply three parameters for a gamma correction curve.

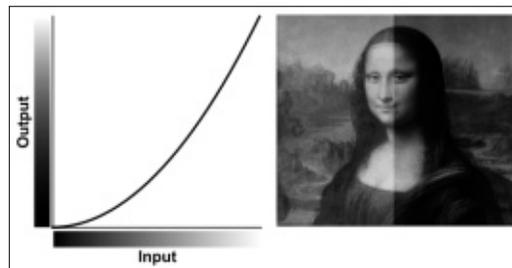
In case you're not familiar with gamma correction, it's a non-linear mapping of input to output values, which is used to adjust the brightness and contrast of an image to compensate for differences in perceived brightness at the ends of the range. Think of it as a more sophisticated option than just changing the slope and intercept using the Linear mode,

because it allows lower values to change at a different rate than higher values.

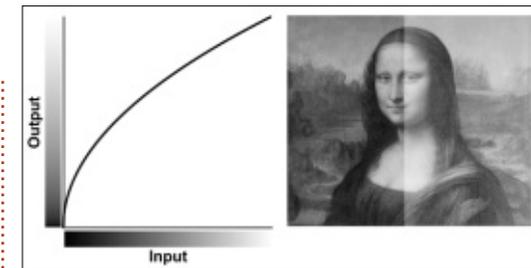
The Gamma mode takes three parameters: Amplitude, Exponent and Offset. The output value from the transfer function is calculated using the following formula:

$$\text{output} = \text{Amplitude} \times \text{input}^{\text{Exponent}} + \text{Offset}$$

That is, the input value (which is in the range 0 to 1) is raised to the power of the Exponent value, multiplied by the Amplitude and added to the Offset. Often the Amplitude is left as 1, and the Offset as 0, so the output is simply the input raised to the power of the Exponent. For an Exponent of 2, therefore, the result looks something like this:



To lighten an image simply use an exponent value of less than 1 – such as in this example with a value of 0.5.



Notice the similarity to the Linear mode with slope values of 0.5 (to darken) and 2 (to lighten). Gamma mode often gives a more detailed result, particularly where there are subtle changes in the darker areas of the input range.

Although I've used a grayscale image to illustrate this filter, in practice you can use a different transfer function for each color component, and also for the alpha channel – useful for leaving the alpha channel untouched in Identity mode whilst you alter the color channels, or alternatively for only affecting the alpha channel whilst the colors remain untouched.

To finish, therefore, here's a final image of Mona in all her colorful glory, with four different component transfers applied. The top left quarter has a Table (1, 0) applied to just the green channel, with the others left as Identity; the top right uses Table (0, 1, 0, 1, 0) on

HOWTO - INKSCAPE

all the color channels; the bottom right uses Discrete (0, 0.25, 0.5, 0.75, 1) on the color channels to posterize the image, and the bottom left uses Table (1, 0) on all the channels to produce a “photographic negative” effect.



Image Credits

“La Gioconda” (aka “Mona Lisa”) by Leonardo da Vinci

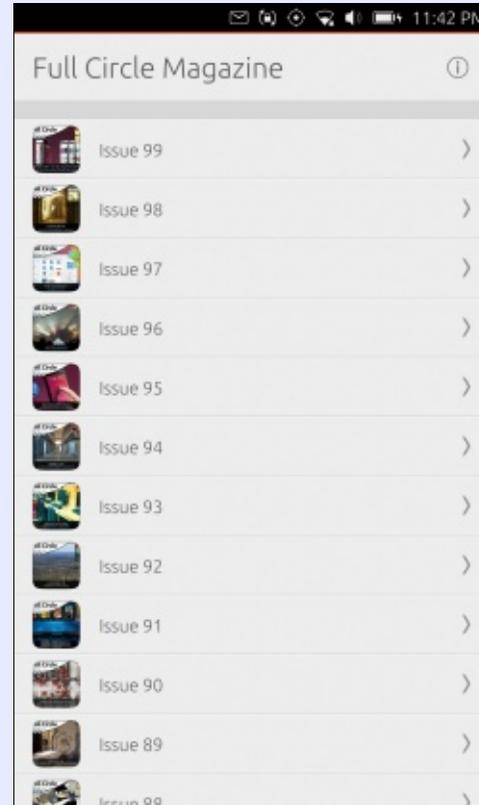
http://en.wikipedia.org/wiki/File:Mona_Lisa,_by_Leonardo_da_Vinci,_from_C2RMF_retouched.jpg



Mark uses Inkscape to create three webcomics, 'The Greys', 'Monsters, Inked' and 'Elvie', which can all be found at

<http://www.peppertop.com/>

THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH

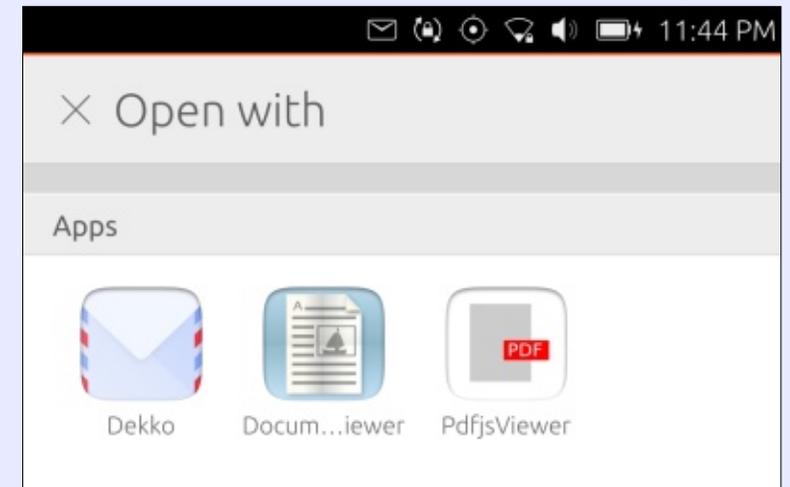
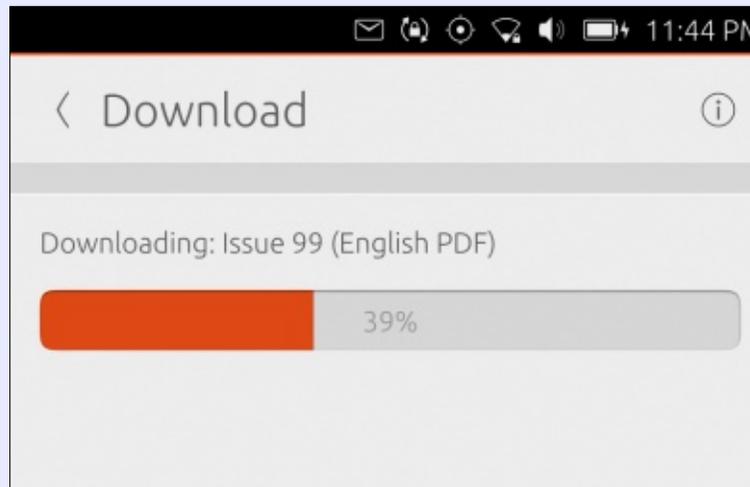


Brian Douglass has created a fantastic app for Ubuntu Touch devices that will allow you to view current issues, and back issues, and to download and view them on your Ubuntu Touch phone/tablet.

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>

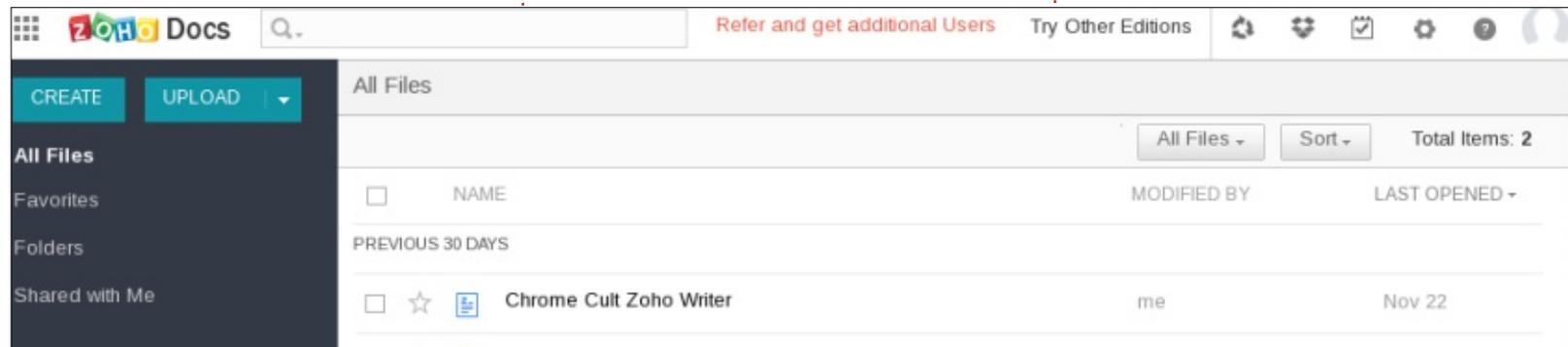




There are sharp differences between Google Docs and Zoho Writer in layout. I prefer using Zoho Writer due to its easier interface and increased options. However, my work uses the Google Ecosphere, so I typically write my files in Zoho Writer. I then upload the finished work to Google Drive for collaboration. Another reason I use Zoho is to lessen my dependence on Google. To access my Zoho Writer, I enter docs.zoho.com in my browser. I usually use my Google+ for logging into it. Zoho opens up to your cloud folder with your saved work like Google Docs.

As a random thought, I mentioned the Zoho for Linux for convergence capability. I would not install that option onto your Ubuntu machine. The app is incredibly cumbersome, slow, and difficult to remove. I simply use my browser. I have used Zoho in Firefox and Qupzilla.

Google Docs has a traditional feel of classic word processors like LibreOffice. The formatting

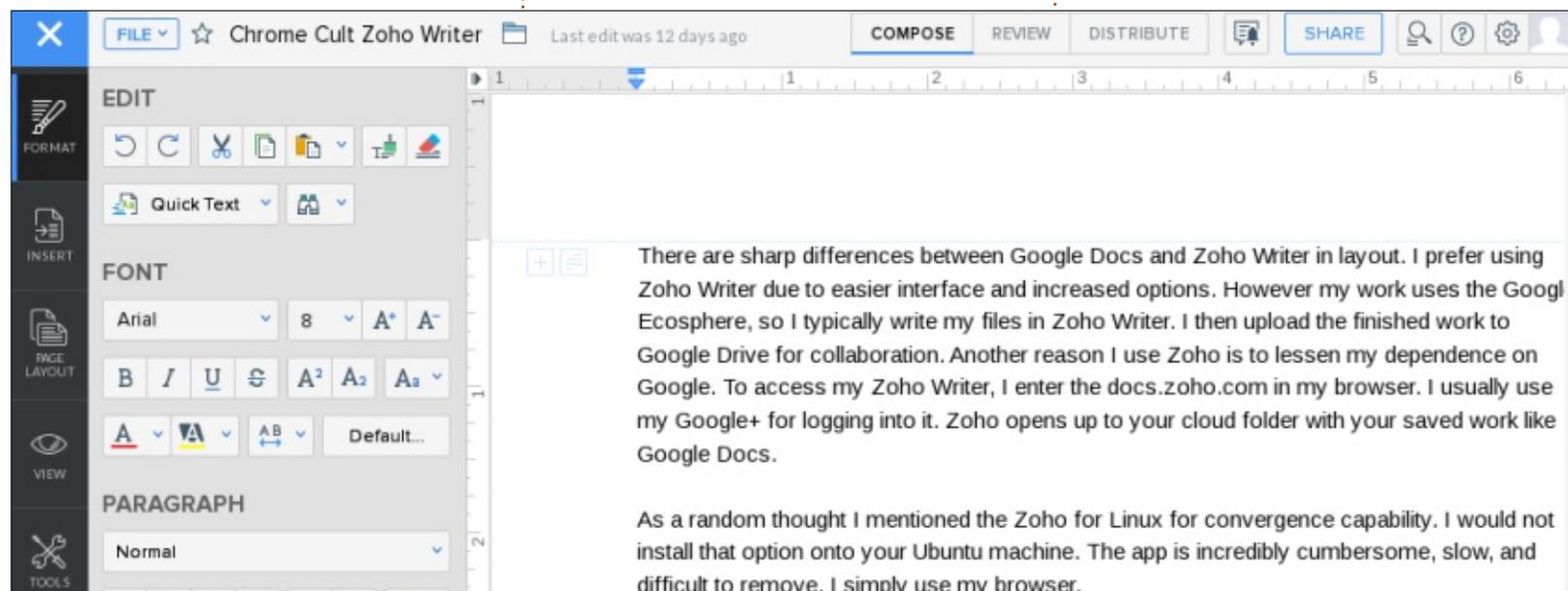


options of fonts, table insertion, etcetera, are located at the top. Zoho Writer has the formatting options to the left of the document. Zoho Writer immediately saves your work to their cloud, similar to Google Docs. The documents can be saved and

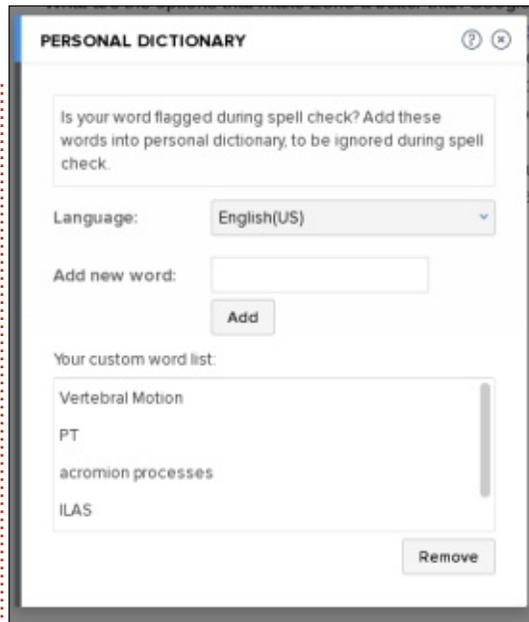
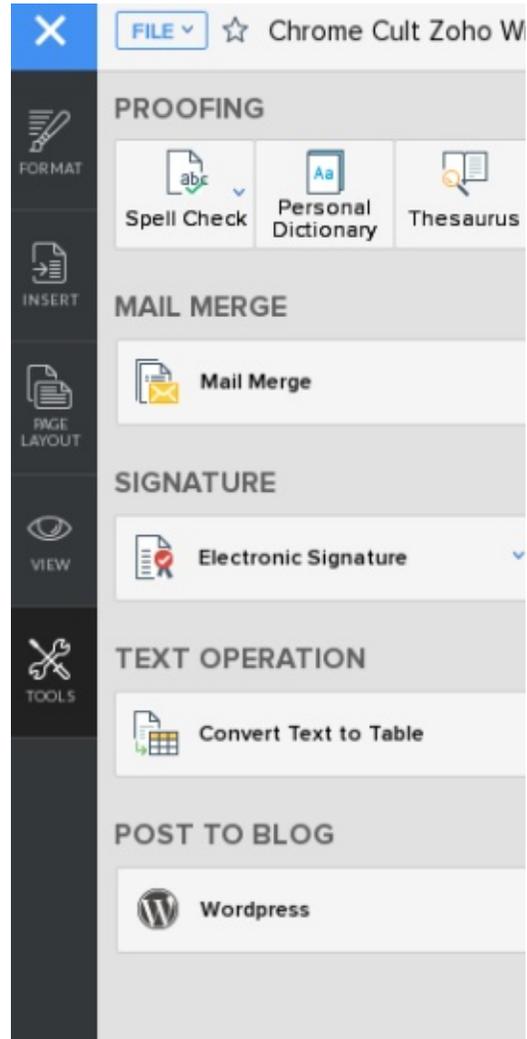
exported to a .PDF, .DOCX, or .ODT file format. Zoho Writer can open .ODT formats easily, unlike Google Docs.

What are the options that make Zoho better than Google Docs? An online guide can be found here:

https://www.zoho.com/docs/writer/help/content_category.htm. This guide explains some of the features and a general how-to for various tasks. The features that make Zoho Writer attractive are: interactive spell check, personal dictionary, thesaurus, electronic

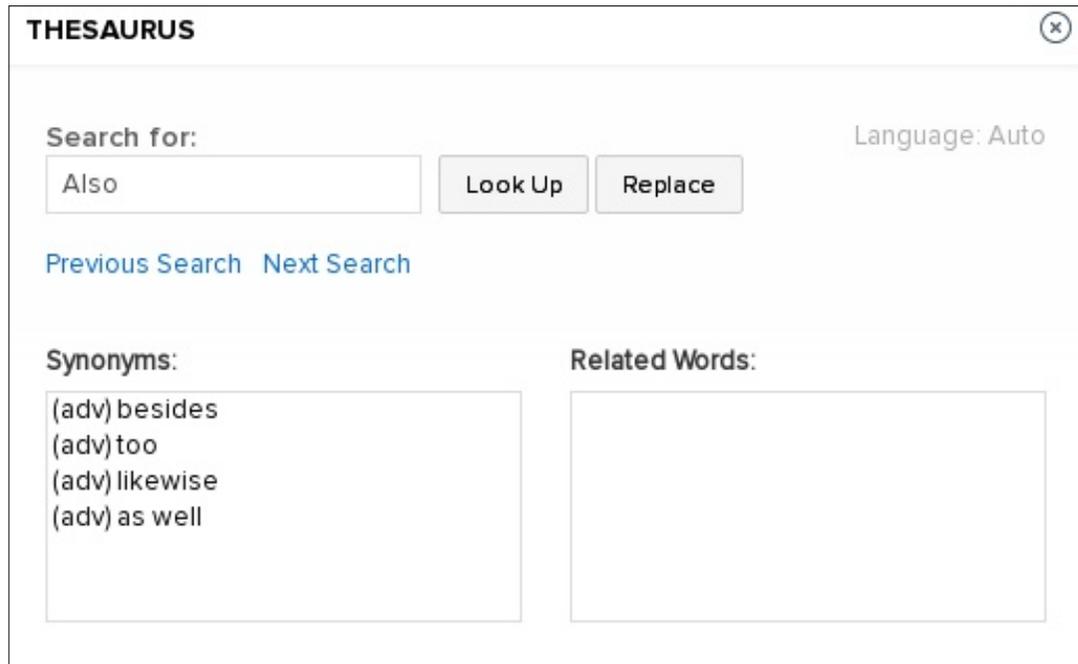


signature, and text to table conversion. I do not use their Mail Merge or Wordpress options. The insert picture option within a document is rather unreliable.



The interactive spell-check has numerous sub-features. Auto-correct can be enabled and customized. Auto-complete is available for typing. The personal dictionary does a better job than Google's personal dictionary. The thesaurus is useful for my abstract writing. The electronic signature uses the Adobe Sign option. The text-to-table conversion is useful for my data analysis sections for manuscripts.

There are numerous options to Zoho Writer. It is not a perfectly polished online cloud processor, but the wide range of options trumps the bad areas. So exactly what are the bad areas? You can do



co-editing with track changes in Zoho. However not many people employ Zoho Writer, unless it is mandated at the enterprise level. Therefore the co-editing is useless. The one option that is extremely annoying is the Zoho Contact Chat. If the chat server goes down, Zoho Writer will attempt to contact the server consistently. There is no way to remove Zoho Contact Chat. Sometimes there is a slight lag in using Writer, this lag can be frustrating. Yet the app does a nice job of mimicking Google Docs with the consistent document saving to the cloud.

Zoho Writer is not a Google

Docs killer, but it is an acceptable replacement for individual use. This entire article was written using Zoho Writer. I would give it 4 out of 5 stars.



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





Finding just the right device for a particular purpose can be daunting. For this review of the Zoomtak T8H V2, it seems important to give some backstory as to how we ended up with this Android box over others. The backstory is a bit lengthy but shows how our needs changed and the kinds of features we ended up looking for.

Our first television-based “entertainment system” was a PVR built using MythDORA, the Fedora Linux distribution of Myth TV. When cable started switching from analog to digital, we switched to XBMC/KODI. About this time, we also gave a lot of thought to switching to a smaller box. Our first small entertainment system was a netbook running XBMCbuntu, a Lubuntu-based distribution with XBMC. It was quite flexible, but it suffered from cable-itis, with VGA, sound, power, infrared receiver, and external drive cables all sprouting from it. Because of the keyboard it was also difficult to clean.

Our next small “entertainment system” was the Pivos XIOS DS Media Play. There were several things that made the XIOS DS Media Play a really good machine for its time. The XIOS DS Media Play was a lot smaller than our netbook, and it had a much smaller infrared receiver, yet still had enough USB ports for all our external drives. The XIOS DS was

also made of thick plastic and had a good quality physical power switch. On top of this, because it ran Android, it could also run Android apps. XBMC/KODI was still in its infancy on Android devices, but the Pivos group had also developed a trimmed down Linux flavour just for the Media Play that ran XBMC/KODI much faster than the Android+KODI distribution did.

It was clear Pivos made a great effort to develop a good quality device. Unfortunately, this trimmed down Linux wasn't quite as flexible as running Android or a full Linux distribution, and more powerful Android devices started to appear about six months after we bought our XIOS DS. It also made less sense for us to run a small box as our main unit since we needed a power cord for the two hard drives, plus a power cord for the XIOS DS. It seemed kind of redundant to have a small device with several other devices plugged into it.

Although it's a step backward in terms of size, we switched out the XIOS DS for a mid-tower Core 2 Quad-based Ubuntu Linux+KODI system. This gave us the flexibility we wanted from the operating system and allowed us to add a third storage drive all within one unit. This solution proved good for our living room, but we also wanted access to the same videos in other rooms. I gave away the XIOS DS shortly after we switched to a PC, that meant looking for a



new Android box.

Last boxing day our local computer store had a super sale on the MyGica ATV 582, a quad core CPU, octa-core GPU, Android box, built around running XBMC/KODI. The ATV 582 is well built, but we preferred the design of the XIOS DS. The ATV 582 also lacks a physical power button, a feature we found ourselves missing. The MyGica ATV 582 is noticeably faster than the Pivos XIOS DS: menus transitioned smoother, movies populated faster, and it responds quicker overall. We might be still using it if I didn't accidentally brick it during a firmware upgrade. We loved the remote control, but after about 5 months it started developing problems. The remote on the ATV 582 uses a button cell 3 volt battery that slid into the bottom. Either the battery ran out really quick or the contact points were degrading to the point where the remote frequently failed to function without removing and reinserting the battery. These problems seemed to compound themselves when I upgraded the ATV 582 to Android 5.x. Suddenly the machine got a lot slower and the remote barely functioned, so I

flashed it with an older Android 4.4 firmware and in the process bricked the unit.

Having used several boxes to run XBMC/KODI we wanted our next KODI box to be something special: excellent build quality, a physical power button, a good remote, more powerful than our last KODI machine, faster connectivity, and a sub-\$200 price tag. At the time we were looking, it seemed the NVidia Shield was the most powerful device. The 16GB version of the Shield was slightly out of our price range, but not

enough for us to disqualify it. It was the Shield's focus on PLEX rather than KODI, and overall design, that kept us looking.

We considered several boxes but ultimately ended up with the Zoomtak T8H because it fulfilled most of our requirements:

- Sturdy metal case
- A physical power button
- 64bit Amlogic S905 Quad Core ARM Cortex A53 processor (2.02GHz)
- 2GB DDR3 RAM (twice the ATV 582)
- 16GB internal storage (twice the

ATV 582)

- Both Gigabit ethernet and Wireless AC
- HDMI 2.0 for up to 4K display
- 3 x USB 2.0 ports

One of our requirements was extra storage. We were pleasantly surprised to see that the Zoomtak T8H had a full-sized SD card reader slot rather than the micro-SD on most devices. We were also pleasantly surprised at the thought given to the power button, it glows blue when on and soft red when off. You might not think it's much of a big deal, but try sleeping with a bright blue LED. The soft red light the T8H gives when turned off is so little that it's barely noticeable. The T8H also has a nice LED readout so you always know the time (at least while the T8H is on).

Zoomtak has built the T8H with KODI in mind. Our box came with the option to install a "build" of KODI complete with a slew of extra plug-ins (most of which we really didn't want). We opted to use the vanilla KODI and install our own plug-ins as we needed them. It's a bit like buying a brand-name PC versus building your own (we didn't want all the extra fluff).



Performance at 1080p is as good as we expected; it played Bluray-quality video both stored on our network and streamed from the Internet without any problem. In terms of benchmarks, the Zoomtak T8H scored 35700 on the popular AnTuTu benchmark compared to 23583 on the MyGica ATV 582. When we were deciding we noticed that some 32bit Amlogic processors were actually rated faster/better than the Amlogic S905. Part of the reason we decided on that particular processor was the fact that it was 64bit.

From Factory, the T8H came with KODI 16.1 and Android 5.1. The default Android screen is well laid out and reminds us a bit of the screen on the MyGica ATV 582, but with a couple of nice additions: a panel with tips, and a larger “clean memory” tile. The ATV 582 has the “clean memory” function as well, but it’s not quite as convenient as it is on the T8H.

When playing video, the aluminum body of the T8H remains quite cool, Zoomtak has done a bang-up job of dissipating heat. In the 3 months we’ve owned the

T8H, we’ve never had to reboot it because of heat or crashing. In fact, it’s crashed less than our desktop PC. That was at least until we tried installing the factory build of KODI. The factory build is a one click install off the “Media Manager” application. The installation takes several minutes. In one Youtube video we found for the T8H, the installation ran over 6 minutes without much happening - this wasn’t the case for us as the download started happening almost right away. The installation, however, left us wondering if it had hung or not, KODI became unresponsive just sitting at the

KODI Jarvis 16.1 screen. Patience is a virtue, but we were having none of that, and exited out of KODI and software rebooted the machine. After a second try, we waited a bit longer on the KODI hanging screen and were rewarded by the factory build.

The factory build comes with a slew of add-ons, many of which didn’t work. Even after configuring Yahoo Weather to our particular city, it still complained. We changed the region to Canada, and that made no difference. Several reboots eventually seemed to fix the issue with the Yahoo add-on.

Performance took a bit of a hit, just as it tends to when you load up a PC with a lot of software, though scrolling through menus was acceptable. While I’m sure there are lots of people who would appreciate the effort put by Zoomtak into providing add-ons like Exodus (for TV and Movies), Kids channels, sports, and various IPTV channels, sorting through what worked and what didn’t was a bit of a mess. Ultimately, we use our box mainly for streaming the content we have stored on our server, so we went back to the stock build of KODI.

The T8H isn’t without issues. The first of which is the company failed to include batteries for their remote control. Every small KODI box we’ve ever bought has included batteries with the included remote. At \$179CDN (a special at the time), one would expect that Zoomtak wouldn’t cheap out with such a small thing. On the positive side, the T8H only takes two AAA batteries so purchasing them isn’t expensive.

We love the size of the remote, it’s a little larger than the MyGica ATV 582 remote. Unfortunately it lacks the keyboard on the reverse



side. You can buy Zoomtak's "FLIP2" remote which includes a keyboard on the other side for an extra \$44.95 CDN (or just buy the T8H with the FLIP2 for \$209.99CDN). Given that the MyGica ATV 582 included this at almost half the price point of the T8H without the FLIP2, it's a bit disappointing to see it not included.

We could maybe forgive the lack of a keyboard on the remote if the numeric keypad also produced letters properly as every other numeric remote we've used has. Something seems off about the programming for this remote. Normally, if you hit a number a couple of times you're able to produce a letter. For example, hit number 2 twice and you get the letter A, three times and you get B, four and you get C. That doesn't work out of the box with the T8H.

The remote also lacks convenience keys for Music, TV Shows and Movies – instead opting to use the keys to launch Android apps (KODI, Apps, File and Web). The only one of these buttons we use is the KODI button, so the rest are wasted and we expect most people would buy this box to run

KODI and not for web or file browsing. Below these buttons are buttons for Audio, 16:9, Full Screen, and Favourites. Again, mostly a waste of buttons in our opinion. One button could be used to toggle between aspect ratios, and television remotes include these and the audio option. The only useful button here is the Favourites button which brings up the Favourites menu in KODI. This is one of the most useful buttons on the remote control since you can add your favourite content by clicking the menu button on the remote and choosing Add to Favourites.

The remote's performance is a bit lackluster compared to other remotes we've used. With our feet up in line with the T8H the IR remote seemed to have difficulty. While most IR remotes have some difficulty when line-of-sight is being blocked, we haven't had as much an issue in the past as we've had with the T8H remote. Perfect line-of-site seems particularly important with this remote.

Another noticeable issue is that the time on the front of the T8H and the time in KODI are not always synchronized, even after the box is on for several minutes. It seems that if you load KODI

shortly after boot, the T8H doesn't have enough time to synchronize the LED clock with Android. Although it wasn't an issue for us, it's worth mentioning that the wireless antenna is not detachable. Although the T8H has ports for 'component out' to older TVs, Zoomtak doesn't include a component cable. The T8H also features optical audio out, but again doesn't include a cable. An HDMI cable is included with the T8H.

Despite all the T8H's shortcomings, it's still a decent Android box. I'm not sure my decision to buy it would have changed if stacked up against the less expensive (\$159) newcomer – the MyGica ATV 485 Pro. MyGica have changed the batteries on their remote to AAA, and still include the flip keyboard. The AnTuTu performance of the ATV 485 Pro is a full 1000 points higher than the T8H using the same 64bit Amlogic processor. It's worth mentioning that, since owning this box, we've reviewed it in a couple of places including on the Zoomtak website (reviews require approval on their site). We weren't overly positive in either of the reviews, but had no feedback from



Zoomtak, which was a bit disappointing since Youtube videos of the Zoomtak factory made it seem like they really cared. Conversely, when we had an issue with our MyGica ATV 582, staff were more than helpful trying to troubleshoot.

The overall build quality of the T8H, and its metal box, really make us love this unit. The remote control is disappointing, but performance on the unit is great at 1080p – both streaming from local network storage and the Internet. Bought directly from Zoomtak Canada, our unit came with a 1 year manufacturer's Warranty.

Star Rating: 3 out of 5

Cost: \$179.99 CDN or \$209.99 for unit plus Flex2 remote (with keyboard on the other side)



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 works on reinventing his blog at <http://www.charlesmccolm.com/>.



UBUNTU DEVICES

Written by Ronnie Tucker

OTA-14

This list is only a highlight of the few changes available in this update. Please check the detailed list for all the changes included in this OTA. OTA-14 generally consists only of selected most important changes, in contrast to the usual rc-proposed/based releases so far.

FRAMEWORK VERSIONS

- No change in framework versions.

IMPORTANT FEATURES

- New Unity8 spread design
- Oxide 1.17
- Opus audio codec support in qtmultimedia

BUGFIXES

- Fixes for SMS notifications not arriving when phone is locked
- Device appearing off during image update

- Fix vibrations when other vibrations are enabled
- Fixes for alarm issues
- ...and more!

DETAILED CHANGES

- Commitlog: <http://people.canonical.com/~lzemczak/landing-team/ota/ota-14.commitlog>

- Milestone: <https://launchpad.net/canonical-devices-system-image/+milestone/14>





I have been using Linux since Jaunty. I was wanting to try Ubuntu, but was tethered to Windows. But when I received a nice widescreen all-in-one, I took the plunge. Never have looked back, and am enjoying Xenial (16.04 LTS)

I have quite a few programs that I run on my PC – many of them equal to or better than their Windows/Mac counterparts. The choices out there are so great, it's hard to write about just one. My favourite part is being able to get an application for free, test it, keep it or look for another that suits me better.

So I managed to whittle this down. I am writing about Minitube. You hooked on youtube? This app is for you. I use this app daily and it's the one entertainment app I would miss.

The interface is super simple with just three buttons to get you going, Search, Browse and Subscriptions. The search screen is simple and minimalistic, with auto-

complete helping you save keyboard clicks.

Browse allows you to look at what's trending on Youtube, split into clickable categories. I actually don't use the browse function as I don't usually just surf YouTube – I usually know what I'm looking for, so I use the Search and Subscriptions buttons.

So you search for what you want to watch, and when you click on the result, it opens in the main Subscription window. If you would

like to save this (and other videos by the same creator), just click Video in the top menu and “subscribe” to the creator. On all videos available from that author, and on the subscription page, a thumbnail will appear and it will have a numbered notification of unwatched videos by that creator.

When you then choose the thumbnail, all videos will be on the left with a thumbnail and the title, length, etc.

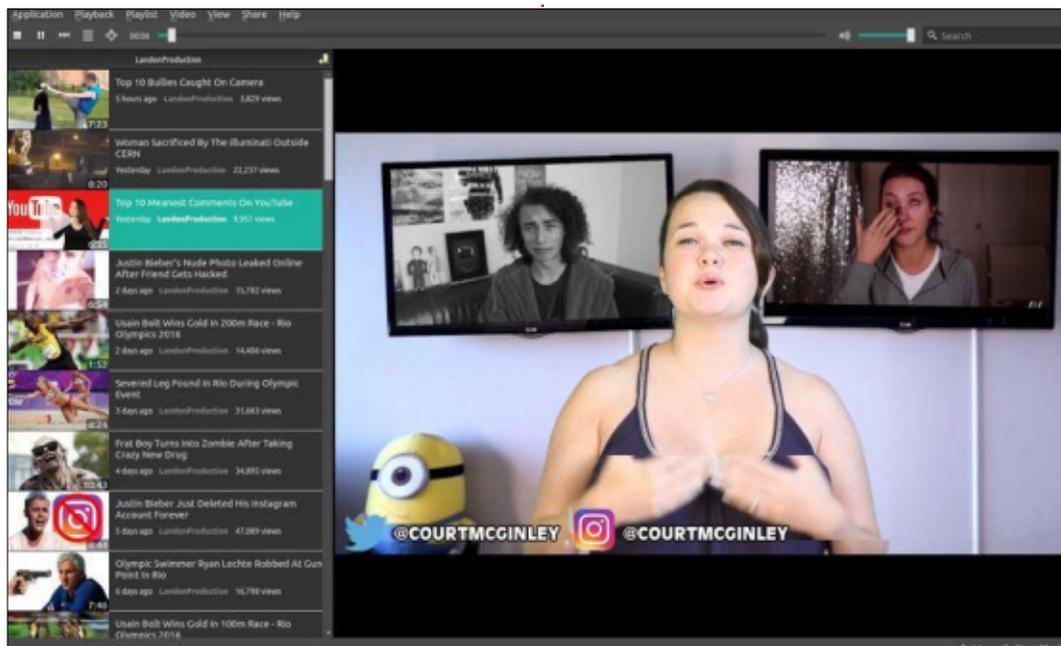
Playback can be set to auto or

manual. I use manual as I don't necessarily want to watch all videos in the order newest-to-oldest. Or not at all. So I choose manual. I also set playback to 720P, as that works well with my 23 inch display and standard video card, GeForce 9300M. The video is crisp even full-screen mode. (Of course if the video is recorded at very low resolution, it likely won't get any better, though in my daily use that is rare).

Though this is not an application exclusively for Linux (it's ported for Windows), it is still free, but not “free as in Beer.” You accept the agreement and can donate if you like. I paid \$10. I use it daily.

I wholeheartedly recommend this simple, but effective, application.

Download it at <http://flavio.tordini.org/minitube>





MY OPINION

Written by Alan Ward

Locked Devices

Recent news concerning Google's Nexus line of smartphones and tablets is not too good for owners. As Ars Technica's Andrew Cunningham reports, "*The Nexus 5 and 2013 Nexus 7 won't receive the Android 7.0 Nougat update from Google today.*" (<http://arstechnica.com/gadgets/2016/08/android-nougat-drops-support-for-nexus-5-and-2013-nexus-7/>). We are talking about devices that, in some cases, have been released less than three years back.

Unfortunately, not supporting electronic devices for a long period of time has become the norm. Apple's line has better support than most, but even for iPhones there comes a cut-off point from which the operating system cannot be upgraded. It is even worse for many models of Android devices, specially when considering lower-priced items. In some cases, no operating system upgrades have been made available at all to device owners. This has personally happened to me twice.

Running the latest and greatest version of an operating system may not be a priority for many users. However, keeping (relatively) safe from hacking and malware does mean upgrading the applications - and app developers tend to have limited resources. It would be unreasonable to ask them to make sure their applications run on ten or twenty past versions of each operating system; limiting support for earlier versions runs, at best, to two or three versions back. So upgrading an operating system is, in fact, a crucial part of the modern user's strategy to avoid digital mishaps.

The prospect of having to retire a smart device within a two-to-three year time period does not strike me as smart at all. In fact, it makes no economic sense for the user. The device's battery may well require more frequent charging, but replying to a voice call or watching kitten videos on Youtube should be well within the capabilities of a three-year-old device.

On the bright side of things,

Google's Nexus line of devices were known for their unlocked bootloaders. This is the bit of software that plays about the same part as the BIOS on a computer. Specifically, it allows the device to be booted in a special mode, from which another version of the operating system can be installed, a process known as flashing the device. This can be done without needing the approval of the previous system or the help of its update application.

Having an open bootloader is quite a big deal. An alternative version of the device's operating system can be installed, if available. So can Ubuntu Touch, if the device is on the list of supported hardware (<https://wiki.ubuntu.com/Touch/Devices>). And, as we all know, Ubuntu has a good record of providing support for each version, and of carrying on support for specific hardware from one version to the next.

In any case, I had bought a 2013 Nexus 7 tablet mainly to test out

Ubuntu Touch. It has worked flawlessly for me, both under Android 5 and 6, and under Ubuntu. Going forward, I will be able to continue enjoying it and using it with an up-to-date Internet browser beyond the famous three-year limit - but only under Ubuntu. That's fine with me, and more so as it saves me from the cost of having to replace a perfectly functional device.

When, eventually, I need to replace one of my smart devices, I will insist on having an open bootloader on the new one. Being locked into one company's plans for device turnover is something I will no longer stand for.



Alan holds a PhD in Information and the Knowledge Society. He teaches computer science at Escola Andorrana de Batxillerat (high-school). He has previously given GNU/Linux courses at the University of Andorra and taught GNU/Linux systems administration at the Open University of Catalunya (UOC).



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ubuntuforums.org/forumdisplay.php?f=270

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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.



In the first couple of KODI Room articles, I focused on add-ons. It occurred to me that for this third issue it would be good to cover some of the basics, both of dealing with local KODI media, and getting the most out of all the content added to KODI.

Before you add movies, television shows, or music to KODI, it's important to get the naming convention correct. The KODI wiki is the best place to consult for how to name your movies, television shows, or music videos. Movies generally follow the format of:

Movie name (date)
DVD/Bluray.extension

For example:

Guardians of the Galaxy
(2014) DVD.mkv

Television shows are a bit tricky because there are a couple of requirements: first, all episodes for a particular show need to be in a subfolder named after the show, and, second, the names should follow the format:

Show name sXXeXX.extension

For example:

Rent a Goalie s02e05.mkv

In this example, the show is Rent a Goalie, season 2, episode 5. You can also organize files in subdirectories by year or season, but I like this method since it makes finding files simpler.

Music videos follow the format:

Artist - song.extension

For example:

ACDC - Thunderstruck.mp4

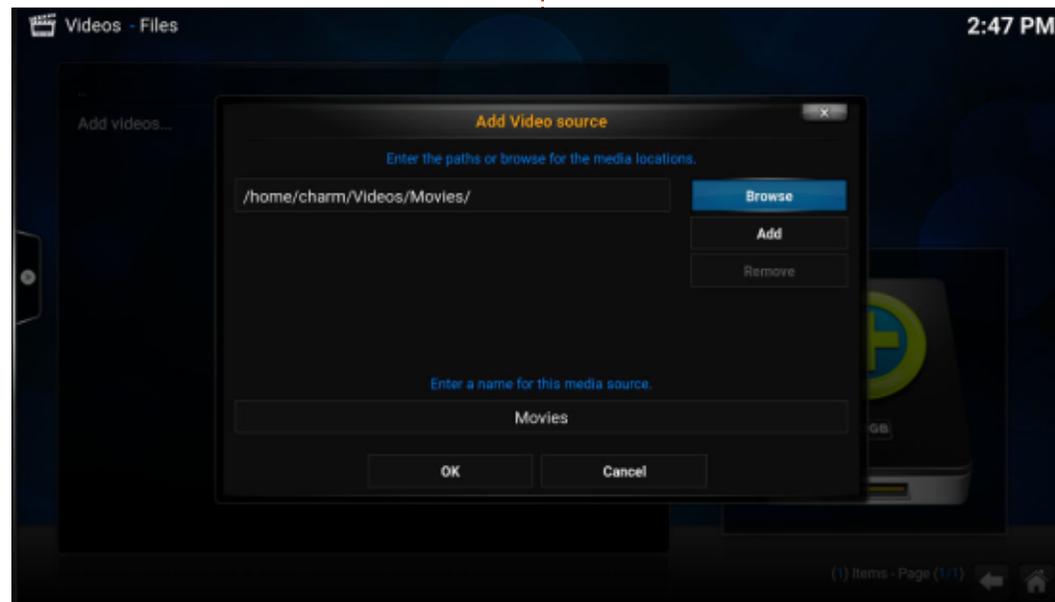
Music in mp3, flac, or other audio-only format, is a little bit different. All music files should have proper ID3 tags. If you're not sure how to rip your CD collection, check out the Linux Labs article in Issue #114 of Full Circle Magazine. Back in Issue #88 you can also find information on how to rip DVDs with Handbrake.

Once you have your content sorted into directories, you'll need to tell KODI where to look for the media and what type of media

you're adding. For movies, television shows and music videos, click the Videos menu option. Next, select Files and Add Videos. A new window opens up and you can either enter the path to the movies, television shows, or music videos directory, or you can browse your file system until you find the folder containing your media.

Just above the OK and Cancel button, KODI asks you to name the media source. In this example, I've named the folder Movies, but you can give it a more descriptive name, and you can have multiple sources for the same kind of content. At home, we use separate folders for Bluray and DVD content so we've added a couple of different sources with different names to help divide the content. We've also separated out DVDs we ripped a long time ago without subtitles from DVDs we've ripped recently with the subtitles by using separate folders and media source names.

Once you click OK, a new screen

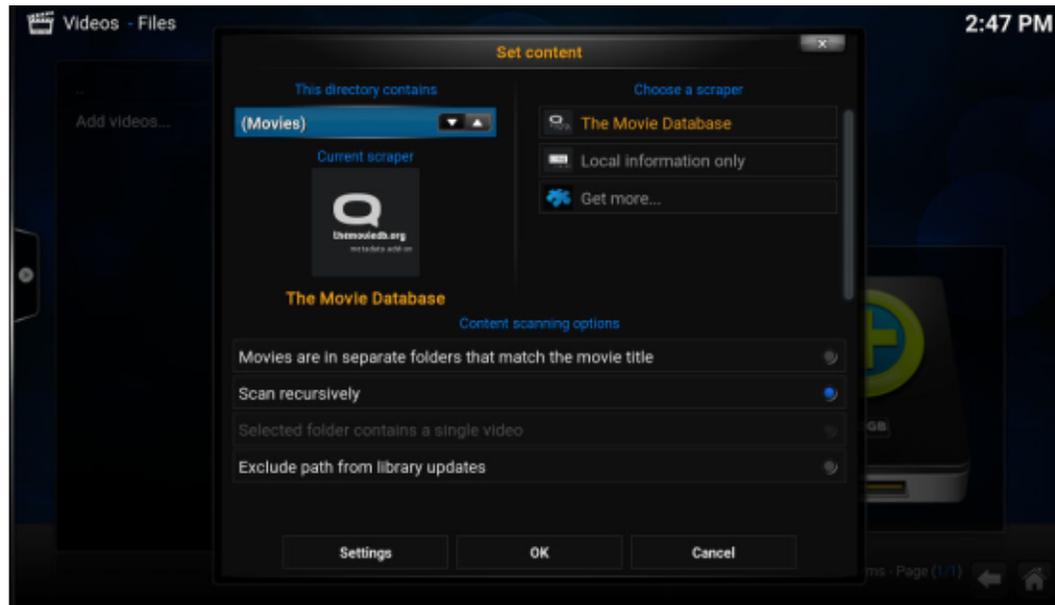


KODI ROOM

appears asking you to set the content type. From this menu, you will choose what type of content the folder contains. In the top left-hand side, click the arrows just under the text 'This directory contains'. KODI will cycle through the following content types: none, music videos, TV shows, and movies.

To the right of This directory contains, you can choose the "scraper" to use. The way KODI gets information about a movie is to "scrape" it off a site. KODI comes with a select group of scrapers for each content type. In our screenshot, The Movie Database is the default for the movies content type, but others like IMDB are available. Some content types have more scrapers available that you can add by clicking the Get more option. Click the OK button. KODI will ask if you want to "refresh the information for all items within the path." Click Yes so the scraper can scrape the movie information.

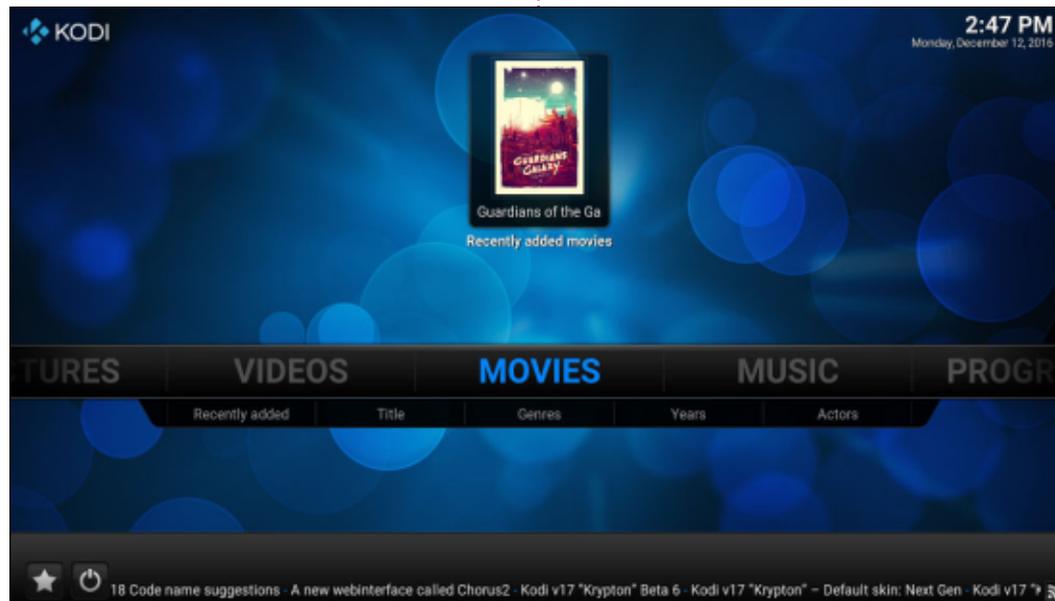
Depending on how many movies KODI has to scrape, it may take a few seconds to several minutes. Don't worry too much about selecting the 'Movies are in



separate folders' option, we've found KODI scrapes movies in named subdirectories regardless of whether this option is selected as long as 'scan recursively' is

selected.

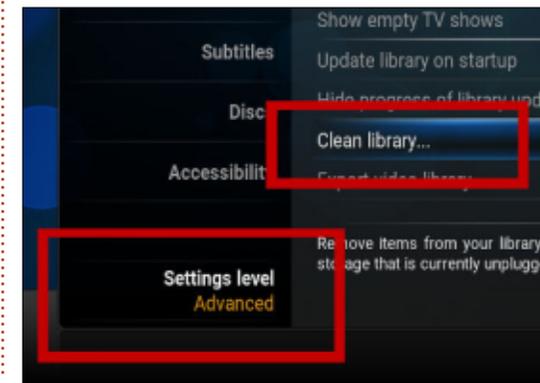
Sometimes you'll find yourself in a situation where a movie shows up twice in your media library.



There are a couple of reasons for this: sometimes you actually have the same movie saved twice with a slightly different name, sometimes you've removed a duplicate movie or renamed a movie and when it got scraped it added a second movie to the library, and sometimes you have duplicates because you've got a Bluray and DVD version. What we want to do is "clean" the library, so, the next time auto update runs (or you manually scrape content), all old content will be removed.

Click System > Video

Change the Settings Level at the bottom of the screen from Standard to Advanced. You can now scroll down the right-hand side until you see the Clean library option. Click Clean library and click Yes when prompted.



This tip won't remove extra movies if you still have multiple files with the same name, but it fixes the duplicate scraped information from the library when you've deleted a file or changed a filename.

Everyone has run into them; movies or television shows where the audio suddenly dips to a below perceptible level. What's worse... as we get older, most of us tend to have an even more difficult time hearing. Subtitles are a great way to see what sometimes can't be heard. There are a couple of ways to enable subtitles. If you've ripped a Blu-ray or DVD with subtitles embedded, you can enable them by hitting the Enter key on a keyboard or clicking the OK button on your remote when your movie first starts. Next, click the symbol that looks like a square with a line at the bottom, a fly out menu appears where you can Enable or download a subtitle.

You won't be able to download subtitles until you've set up a subtitle source in KODI. To set up a subtitle source:

Click System > Add ons > Install

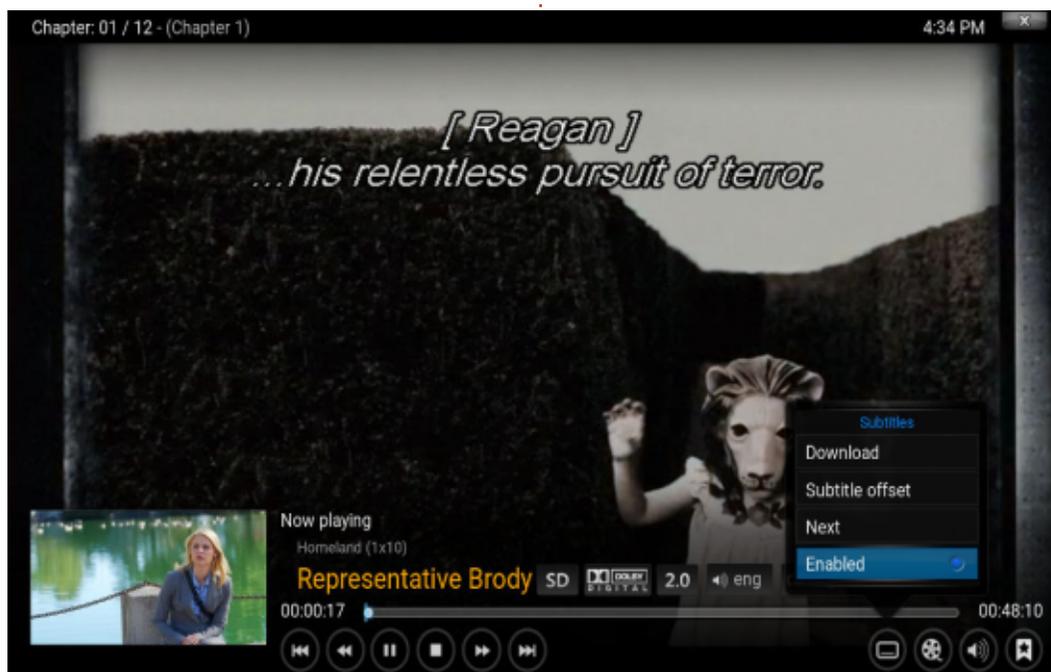
from repository > Subtitles

Then choose the source for the subtitles. For movies in English, we like Subscene.com. OpenSubtitles.org has recently shifted to require people to log-in before downloading subtitles. Once you have a subtitle source, you can use the same process, or clicking OK on the remote, while the media is playing – to download a subtitle. Sometimes downloaded subtitles are slightly off. You can try to fix this by selecting Subtitle Offset from the fly out menu that's activated when you try to download or enable a subtitle.

The last tip for this month works whether you want to play local, network, or streaming Internet content. First find the movie, television show, music video, music or streaming content you want to play. On a keyboard, you can press the c key (for context menu), remote controls usually label this as Guide or Menu. A window appears. Choose Add to favourites to add the movie to a special favourites menu. On the default KODI skin, you can see your favourites by clicking on the Star on the bottom left of the screen, right beside the Exit/Power button. We like to favourite television shows because it lets

you quickly access other episodes without sorting through your entire television show collection.

Got a KODI tip you think would be helpful, feel free to email tips to Full Circle Magazine: letters@fullcirclemagazine.org, or send them to me directly: chaslinux@gmail.com.



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 works on reinventing his blog at <http://www.charlesmccolm.com/>.



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've several files that can not be rsync. Progress of operation is done to 100% but once at 100% Kubuntu "17.04" returns me an input/output error (5).

I firstly check if HDD had some bad sectors with smartmontools and badblocks commands, but no bad sectors.

A (Thanks to *sudodus* in the Ubuntu Forums) You checked for bad blocks, but did you check and try to repair the file system?

Unmount the partition and:

```
sudo e2fsck -f /dev/sdxy
```

where x is the drive letter and y is the partition number.

Q My 14.04 root partition is 12 GB, and is now 95% full. How can I find and possibly remove excess "stuff" that may be filling up the root partition?

A You can delete the .deb files for all the updates you have installed over the years. Once installed, the .deb files serve no purpose.

```
sudo apt-get clean
```

Also, use Synaptic Package Manager to "completely remove" most of the old kernels, then run: sudo update-grub

Q I'm trying to install VMware Workstation 12.5.2 on Ubuntu 16.10. I ran a "sudo chmod +x VMware-Workstation-Full-12.5.2-4638234.x86_64.bundle" in my terminal, but I don't know where to go from here.

A Go to this page:

https://www.vmware.com/support/pubs/ws_pubs.html

Download the "Using VMWare" PDF. It includes a section on installation.

Q I want to get pictures from Canon EOS camera.

A As ajgreeny suggested, just use the file manager. Details depend on what version of Linux you are using, and perhaps which Canon camera you have.

Mark the files you want to copy, go to Pictures. and perhaps make and go to a folder such as 20161228, then paste the files into the folder.

TOP QUESTIONS AT ASKUBUNTU

If you are nervous about clicking on a short goo.gl URL, you can get information about it quite easily. Copy the URL, paste it into your browser's address bar, and add a plus-sign. Now goo.gl will tell you where it goes, as well as statistics about its use. (Thanks to askleo.com for the tip.)

* How to capture disk usage percentage of a partition as an

integer?

<https://goo.gl/xZnV4d>

* How can I track time from the command-line?

<https://goo.gl/IUMq0Z>

* Music notation software for Ubuntu

<https://goo.gl/YiFJyR>

* Do GUI based applications execute shell commands in the background?

<https://goo.gl/8HhywK>

* How to check whether a partition is mounted by UUID?

<https://goo.gl/mfWjzY>

* What is the command to remove all files but no folders?

<https://goo.gl/2Z9z90>

* How to block specific username from ssh?

<https://goo.gl/7Qsjjk>

* My Ubuntu 16.04 goes into a state of limbo when suspended

<https://goo.gl/ZI4t3M>





There were many games developed during the late '80s and early '90s that became cultural icons in their own right. They became the yardsticks by which future games in that genre would be measured. Super Mario Bro's for Platformers. Doom for FPS games. Ultima for RPG's. Myst for adventure games.

In 1993, a developer called 'Westwood Studios' released one of the most ambitious game titles in history up to that point. A game set in an alternate Earth but modern times, telling a story from both sides of a fictional war. They used all the tricks they could to tell a compelling story from both sides of a war, complete with hammy acting in the video cut-scenes that would play before each mission.

I am talking about Command & Conquer. After it found very quick success, Westwood pushed out an expansion pack the following year, 'The Covert Operations' in 1996. In 1996, they released the first spin-off game (which was planned as another add-on to the original

game) called 'Red Alert'. This game took what worked in the original and improved on it. Better art, sound, everything.

The following year, they released not one but two expansion packs, 'Counterstrike' and 'The Aftermath', adding all this goodness to an already great game.

Then, in 1998, Westwood Studios went back to one of their original successful games and remade it. Dune 2000 was released, and although it used the

same engine as Red Alert, it did not fare very well critically – with IGN and Gamespot giving it 5/10 each.

All these games are among my favourites of all time, and I have bought every edition of these games that I could find. But, during the past few years (since I made the switch to Linux), I could not enjoy them as much in an emulated environment (Dosbox or Virtualbox). However, I was surprised when I found out about OpenRA whilst browsing around Google. When I had heard that

Command & Conquer and Red Alert, including the addon packs, became freeware, I was looking for a way to get these games running in Linux.

I was surprised when I not only managed to find this program, but also saw that it was open-source, updated to use the hardware acceleration of modern video cards using OpenGL and cross-platform positional sound built upon OpenAL. The people behind this not only managed to recreate the engine powering up these games, they also allow you to download the assets that would be needed to play the game from a server (if you do not have the CD or the freely available ISO files previously downloaded).

GAMEPLAY

While I (and possibly you) love the classic RTS gameplay, multiplayer game design has evolved significantly since the early 1990s. The OpenRA mods include new features and gameplay improvements that bring



them into the modern era:

- A choice between “right click” and classic “left click” control schemes.
- Overhauled sidebar interfaces for managing production.
- Support for game replays (during single and multiplayer) with an observer mode designed for online streaming.
- The ‘fog of war’ that obscures the battlefield outside of the line-of-sight of your controlled units/buildings.
- Civilian buildings that can be captured and used for strategic purposes.
- Units gain experience as they fight, improving with each rank.

Therefore these are classic games with modern standards that work in each ‘mod’.

PLOT/STORY

With the game being focused more on the multiplayer, there is a large single-player component with many of the original missions being recreated in this engine.

But each of the 3 mods have separate stories:

DUNE 2000

- Three great houses fight for the precious spice melange.
- He who controls the spice

controls the universe!

- Establish a foothold on the desert planet Arrakis, where your biggest threat is the environment.

COMMAND & CONQUER – TIBERIAN DAWN

An alliance of nations fights to protect Europe and northern Africa from a mysterious terrorist organization and the valuable but toxic alien mineral, Tiberium, that is slowly spreading over the world.

COMMAND & CONQUER – RED ALERT

In a world where the Third Reich

never existed, the Soviet Union seeks power over all of Europe. Allied against this Evil Empire, the free world faces a Cold War turned hot.

HOW TO INSTALL THE ENGINE AND GAMES

You can either get the latest stable version, or testing version, of the engine from their website located at www.openra.net/downloads. You can choose either the more stable but less feature-rich version, or the more feature-rich and possible very buggy and unstable testing version. Once the small file (about 20 MB) has been downloaded,



either by double-clicking the file (thereby opening up the default .deb installer), or by opening up a terminal and typing in the following:

```
sudo dpkg -i  
~/Downloads/openra-  
(rest_of_file_name).deb
```

Assuming that is where you're downloading the file from.

Now to get the game data.

AUTOMATIC INSTALLATION (RECOMMENDED)

OpenRA will prompt you to install the original game content the first time that you launch a mod. This process occurs automatically from inside the game: the game client can download a minimal set of game files from the internet, or copy the full game content (including music and movies) from an original install cd.

MANUAL INSTALLATION

If you would like to install the game files manually, then you may copy the *.MIX files to:

- Windows: %USERPROFILE%\My Documents\OpenRA\Content\\${MOD} or %ProgramFiles%\OpenRA\Support (portable installation)
- Mac OSX: ~/Library/Application Support/OpenRA/Content/\${MOD}
- Linux: ~/.openra/Content/\${MOD} (Note: Linux is case-sensitive, so you have to change .MIX to .mix)

where \$MOD is the mod ID:

- ra for Red Alert
- cnc for Tiberian Dawn
- d2k for Dune 2000

On the first run, the game will ask whether you want to download a stripped-down version automatically (as both the full motion video and music soundtrack are optional). For a wholesome multimedia experience, you should copy the complete *.MIX content from the original game CD.

INSTALLING THE FULL-MOTION VIDEOS

The FMVs take up most of the space on the original game media (~500MB each), so they are not included in the downloaded game assets. They can easily be added if

you have the original media, though.

TIBERIAN DAWN

The installation of the movie files is quite straightforward here. You need both the GDI and Nod disc for the installation, as each contains a different set of movies.

- Insert the GDI disc.
- Copy the MOVIES.MIX file from the CD to the cnc game content directory and rename it to movies-gdi.mix.
- Insert the Nod disc.
- Copy the MOVIES.MIX file from the CD to the cnc game content directory and rename it to movies-nod.mix.

RED ALERT

The steps here are a bit more involved, as the .MIX files we are interested in are actually contained in yet other .MIX files, so we have to extract them first. Here, too, you need both the Soviet and Allied disc.

- Insert the Allied disc.
- Copy the MAIN.MIX file from the CD to your ra game content directory.
- Open a terminal/console window,

change to the directory where you installed OpenRA.

- Run the following command: `./OpenRA.Utility.exe ra --extract movies1.mix`
- Move movies1.mix from the OpenRA installation directory to your ra game content directory.
- Insert the Soviet disc.
- Copy the MAIN.MIX file from the CD to your ra game content directory (you can overwrite the existing one).
- Open a terminal/console window, change to the directory where you installed OpenRA.
- Run the following command: `./OpenRA.Utility.exe ra --extract movies2.mix`
- Move movies2.mix from the OpenRA installation directory to your ra game content directory.

DUNE 2000

This one is easier again. In fact, the Copy from CD option in-game during the asset installation will already copy the movies, in contrast to the other two mods.

If you have the need to install them manually, it's still easy since it just involves copying files from the CD to your hard drive. This will

work correctly only for the assets from the English version of the game, as the files are named differently for other languages.

- Insert the Dune 2000 disc.
- Move the contents of the movies directory on the CD into the Movies (note: upper-case!) subdirectory of the d2k game content directory.
- Optionally: if you have a non-English version of the game, you have to rename the movie files to match their English counterparts, so, for example, from a_br01_g.vqa ('g' for German) to a_br01_e.vqa ('e' for English).

CONCLUSION

While this is an amazing piece of work that is slowly improving all the time, I cannot wait until they implement their next feature into the game: support for Command & Conquer 2 – Tiberian Sun!

I will happily rate this 'game' an extremely well-deserved 4/5 stars.

System requirements:

- Shader Model 2.0 capable GPU (Radeon 9500+ / GeForce FX5200+ / GMA X3100+)
- 1GB Free Hard Drive Space
- 512MB RAM (the game itself uses ~100MB)
- Sound
- 3 Button Mouse
- Network Card (desirable)
- Display capable of at least 1024×768

So... basically any pc made in the last 10 years.



Christopher is a simple technician who loves games and movies. I have just started a website (willbeone-techtips.co.za) where I try to upload a couple of times a week.





PATRONS

PATRONS

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 Antonino Ruggiero
 Andrew Taylor



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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FCM#117

Deadline:
Sunday 08th Jan 2017.
Release:
Friday 27th Jan 2017.



Full Circle Team



Editor - Ronnie Tucker
ronnie@fullcirclemagazine.org

Webmaster - Lucas Westermann
admin@fullcirclemagazine.org

Editing & Proofreading

Mike Kennedy, Gord Campbell, Robert Orsino, Josh Hertel, Bert Jerred, Jim Dyer and Emily Gonyer

Our thanks go to Canonical, the many translation teams around the world and **Thorsten Wilms** for the FCM logo.

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