



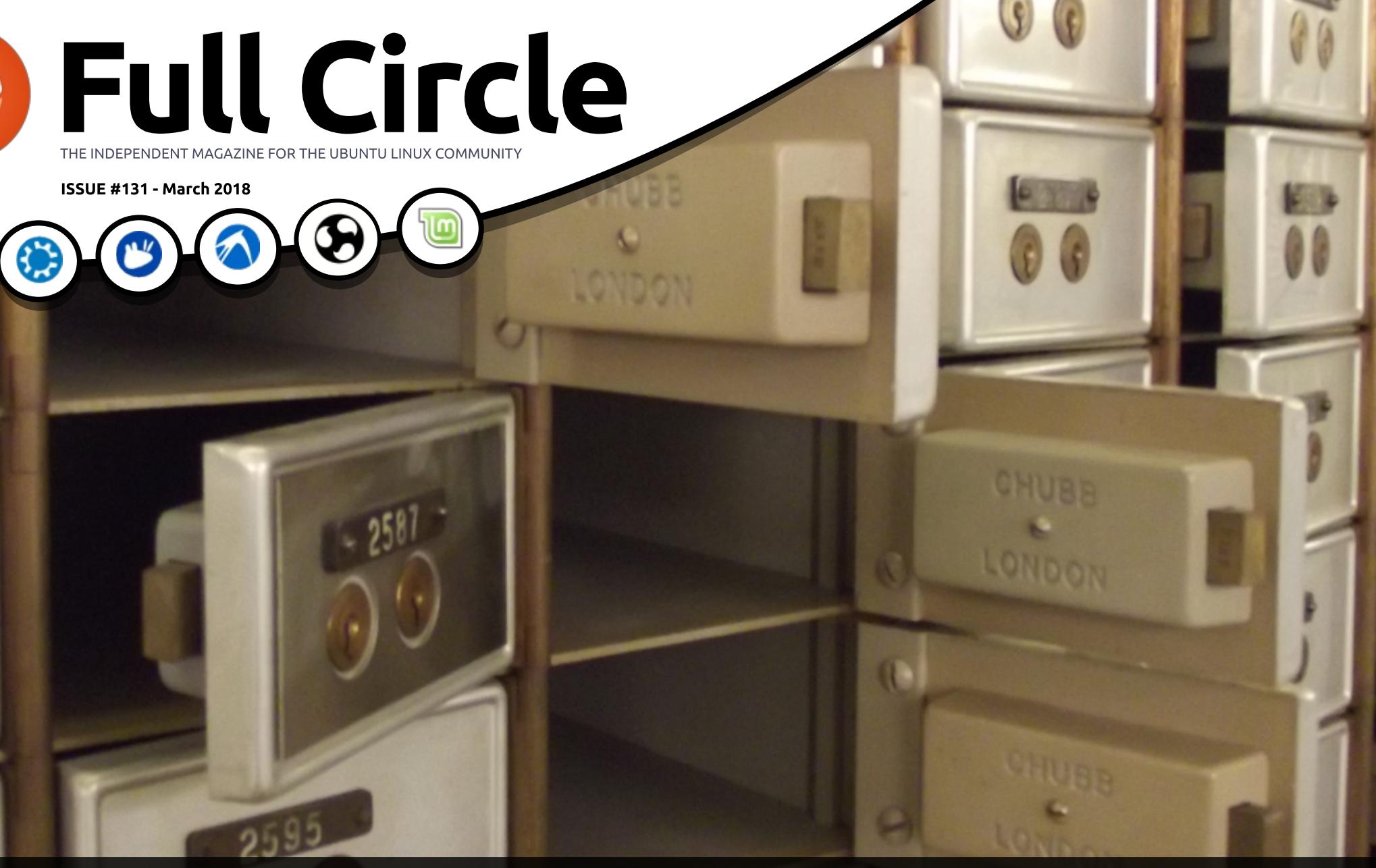
# Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #131 - March 2018



Photo: Elliott Brown (Flickr.com)

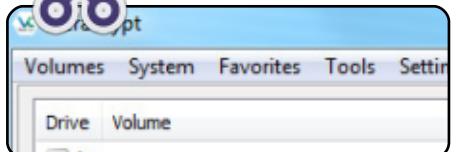


## FULL DRIVE ENCRYPTION KEEP YOUR DATA SAFE USING VERACRYPT

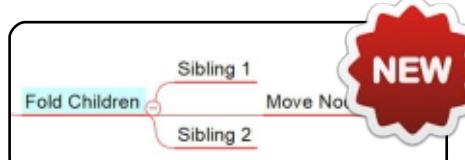
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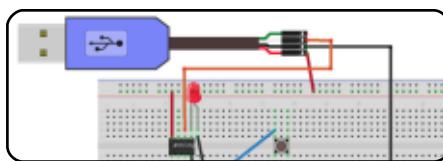
## HowTo



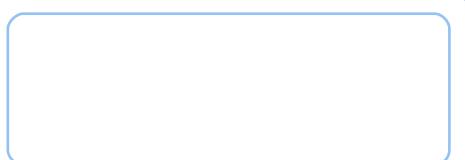
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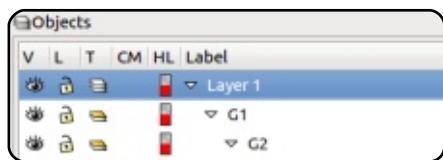
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## Graphics



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# Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY



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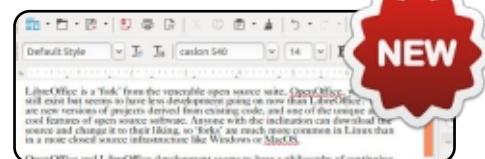


```
#An alias to make the ls command more detailed
alias ls = "ls -la --color=always --classify"
```

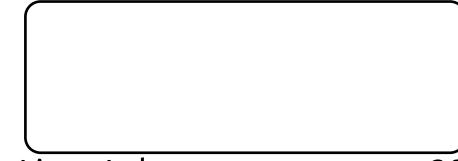
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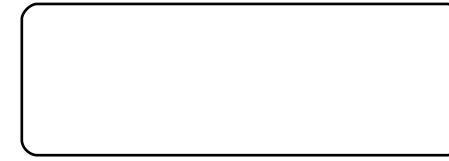
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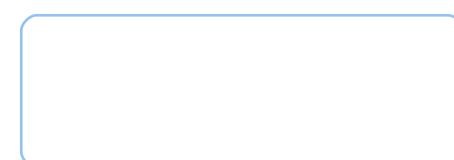
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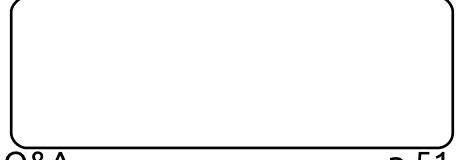
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# EDITORIAL



## WELCOME TO THE LATEST ISSUE OF FULL CIRCLE.

This month we continue with Freeplane, GreatCowBasic, and Inkscape. In other news: I have heard from Greg (which was a relief) and he's hoping to be back with us next month. I've squeezed in my Veracrypt article on using full-drive encryption. The GDPR (General Data Protection Regulations) is a big deal here in the UK, so maybe this will help some of you who (like me) will need to encrypt several computers to meet the regulations. Again, disclaimer, I have not used this on a multiboot machine. So please be careful in that respect.

Elsewhere this issue: we have an excellent review of Linux Lite which uses the LTS (Long Term Support) versions of Ubuntu with XFCE. It sounds like it's perfect for those old machines out there that are sitting gathering dust. Gord is going through a mid-life crisis and would like your input on what he should cover in his Q&A column.

Apologies if you've been using the official Full Circle Magazine app on your Ubports Touch device(s). The site hadn't been updating a JSON file from a Python script. This meant the app wasn't showing issues after FCM#125. The JSON file is now fixed and up to date. So the FCM app should now show up to FCM#131. If not, please get in touch to let me know.

Anyway, enough waffle from me. Although, I have just realised that next month marks ELEVEN years of FCM! Wow. Just... wow.

**All the best, and keep in touch!**

Ronnie

[ronnie@fullcirclemagazine.org](mailto:ronnie@fullcirclemagazine.org)



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## Weekly News:



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<http://www.stitcher.com/s?fid=85347&refid=stpr>



<http://tunein.com/radio/Full-Circle-Weekly-News-p855064/>



## SOON YOU'LL BE ABLE TO RUN LINUX APPS IN VM ON CHROME OS

Most of you would be knowing that Chrome OS shares an intimate relationship with Linux. This "bare-bones Linux-based operating system" is based on Gentoo Linux. However, you can't run Linux applications on it, which is a deal breaker for many enthusiasts.

If you're really willing to run Linux apps on Chrome OS, you can do so with the help of solutions like Crouton that need you to turn off most of the security features by enabling Developer Mode. It looks like Google is working on an upcoming feature to bring a similar functionality to Chrome OS.

As per a new commit on Chromium Gerrit, Chrome OS will get a "New device policy to allow Linux VMs on Chrome OS," according to a report from Android Police. The commit hints at a "Better Together" menu in the

Chrome OS settings.

With the help of this option, the users will be able to install Linux distros like Ubuntu or Arch Linux and use popular applications. Moreover, gaming enthusiasts will be able to run Steam. Given that many Chromebooks available in the market ship with more than capable hardware, this shouldn't be a problem in real-life.

Source:  
<https://fossbytes.com/linux-apps-in-vm-chrome-os/>

## UBUNTU 18.04 LTS BIONIC BEAVER

Following the release of Ubuntu 17.10 Artful Aardvark, Canonical CEO Mark Shuttleworth announced that Ubuntu 18.04, which would be an LTS release, is going to be called "Bionic Beaver." While Beaver refers to a large, amphibious rodent with smooth fur and sharp teeth, Bionic is an ode to the robotics and artificial

body parts.

We also conducted a little poll on Fossbytes regarding the name. About 80% visitors loved the codename. Others suggested names like Ballsy Baboon, Busy Bee, Bumble Bee, etc. This also brings us to the next step, i.e., exploring what could be the expected features of Ubuntu 18.04 LTS. In case you're running an LTS release and planning to make perform the upgrade to 18.04, things are surely going to be pretty exciting for you.

But, before digging into the features aspect, let's tell you about the Ubuntu 18.04 release date.

Canonical has made the Bionic Beaver release schedule public and expected release date isn't surprising. The first Alpha for opt-in flavors is expected to ship on January 4th, 2018. The final stable release will be available on April 26th, 2018. Currently, you can grab the daily builds for your testing purposes.

Source:  
<https://fossbytes.com/ubuntu-18-04-bionic-beaver-release-date-features/>

## NEW LINEAGEOS IS BASED ON ANDROID 8.1

With the release of the alternative Android system LineageOS in version 15.1, the developers have completed the update to Android 8.1 (Oreo).

This jumps LineageOS from Android 7.1 to the latest edition. With the new version, the developers have also included the Google-initiated update system Project Treble. This step was hard work, the team reports. Not only have Treble been adapted, but also the existing hardware-related code has been converted to the functions of Treble. Thus, features such as LiveDisplay and the control of the LEDs are compliant with the Android standards, it says in the announcement. The developers feel better equipped for the future

and new versions of Android.

In addition to the new features of Android 8.1, the LineageOS makers have come up with their own features. With the so-called styles can now set an individual accent color, a bright and a dark interface are available. In conjunction with LiveDisplay, the theme can be put in a day-and-night mode, switching the display to darker mode at night.

The update to the new version is done via the update app of LineageOS. The developers also offer the download of the system via the website.

Source:

<http://www.linux-magazin.de/news/neues-lineageos-basiert-auf-android-8-1/>

## CALAMARES 3.2 LINUX INSTALLER WILL INTEGRATE A MODULE FOR THE KDE PLASMA DESKTOP

Calamares is a distribution-independent system installer featuring advanced partitioning

with full-disk encryption support used in popular GNU/Linux distros like KaOS, KDE Neon, OpenMandriva, Netrunner, Sabayon, Siduction, Tanglu, Bluestar Linux, Chakra GNU/Linux, GeckoLinux, and others.

Calamares 3.2 will be the next major update of the universal installer framework, promising a plethora of attractive new features and enhancements for OS developers who want to implement it as default graphical installer in their next releases, such as Lubuntu Next 18.04 (Bionic Beaver).

One of these new features is a module for the KDE Plasma desktop environment that will allow the selection of the Plasma Look-and-Feel from the installer. However, the module will only be enabled if both KDE Plasma and KDE Frameworks are present at build time on the target system.

The final Calamares 3.2 release is expected to arrive in March 2018 with many other interesting features, including the ability to get a phone notification when an installation finishes, support for OpenRC initialization of encrypted

filesystems, better detection of keyboard layouts, and machine-specific URLs for the update-manager.

Source:

<http://news.softpedia.com/news/calamares-3-2-linux-installer-will-integrate-a-module-for-the-kde-plasma-desktop-519977.shtml>

## HACKERS EXPLOITING RTORRENT TO INSTALL UNIX COIN MINER HAVE NETTED \$4K SO FAR

Attackers have generated \$3,900 so far in an ongoing campaign that's exploiting the popular rTorrent application to install currency-mining software on computers running Unix-like operating systems, researchers said Thursday.

The misconfiguration vulnerabilities are similar in some respects to ones Google Project Zero researcher Tavis Ormandy reported recently in the uTorrent and Transmission BitTorrent apps. Proof-of-concept attacks Ormandy developed exploited weaknesses

in the programs' JSON-RPC interface, which allows websites a user is visiting to initiate downloads and control other key functions. Ormandy's exploits demonstrated how malicious sites could abuse the interface to run malicious code on vulnerable computers.

The in-the-wild attacks targeting rTorrent are exploiting XML-RPC, an rTorrent interface that uses HTTP and the more-powerful XML to receive input from remote computers. rTorrent doesn't require any authentication for XML-RPC to work. Even worse, the interface can execute shell commands directly on the OS rTorrent runs on.

The attack scenario against rTorrent is more severe than for uTorrent and Transmission because attackers can exploit vulnerable rTorrent apps with no interaction required of the user. The uTorrent and Transmission flaws, by contrast, could be exploited only by sites a user actively visited. Ormandy's exploits used a technique known as domain name system rebinding to make an untrusted Internet domain resolve to the local IP address of the

computer running a vulnerable BitTorrent app.

Source:

<https://arstechnica.com/information-technology/2018/03/hackers-exploiting-rtorrent-to-install-unix-coin-miner-have-netted-4k-so-far/>

## NEW ALGORITHM LETS AI LEARN FROM MISTAKES, BECOME A LITTLE MORE HUMAN

In recent months, researchers at OpenAI have been focusing on developing artificial intelligence (AI) that learns better. Their machine learning algorithms are now capable of training themselves, so to speak, thanks to the reinforcement learning methods of their OpenAI Baselines. Now, a new algorithm lets their AI learn from its own mistakes, almost as human beings do.

The development comes from a new open-source algorithm called Hindsight Experience Replay (HER), which OpenAI researchers released earlier this week. As its

name suggests, HER helps an AI agent “look back” in hindsight, so to speak, as it completes a task. Specifically, the AI reframes failures as successes, according to OpenAI’s blog.

Think back to when you learned how to ride a bike. On the first couple of tries, you actually failed to balance properly. Even so, those attempts taught you how to not ride properly, and what to avoid when balancing on a bike. Every failure brought you closer to your goal, because that’s how human beings learn.

With HER, OpenAI wants their AI agents to learn the same way. At the same time, this method will become an alternative to the usual rewards system involved in reinforcement learning models. To teach AI to learn on its own, it has to work with a rewards system: either the AI reaches its goal and gets an algorithm “cookie” or it doesn’t. Another model gives out cookies depending on how close an AI is to achieving a goal.

Source: <https://futurism.com/ai-learn-mistakes-openai/>

## EXTON|OS CLAIMS TO BE FIRST DISTRIBUTION BASED ON UBUNTU 18.04 LTS, LINUX 4.16

Tagged as Build 180301, the new Exton|OS release is based on Ubuntu 18.04 LTS and features the lightweight and modern Budgie desktop environment created by the Solus devs. Budgie 10.4 is on-board this release, which comes with the renowned Calamares universal installer framework by default.

According to the developer, Exton|OS is now fully compatible with the software repositories of Ubuntu 18.04 LTS, which means that users can install any upstream package they need. Also, Arne Exton claims Exton|OS would be the first GNU/Linux distro to be based on Ubuntu 18.04 LTS (Bionic Beaver), due for release on April 26, 2018.

Another interesting fact of the latest Exton|OS release is that it comes with the unreleased Linux 4.16 kernel. The distro is currently powered by the third Linux kernel 4.16 release candidate and

includes packages that have been updated to their latest available versions as at March 1, 2018.

Among the pre-installed apps, we can mention Mozilla Firefox as default web browser, SMPlayer as default media player, GIMP as default image viewer and editor, SMTube for downloading YouTube videos, the Gparted partition editor, and Refracta Tools so you can build your own Ubuntu 18.04 LTS live system.

Source:

<http://news.softpedia.com/news/exton-os-claims-to-be-first-distribution-based-on-ubuntu-18-04-lts-linux-4-16-520052.shtml>

## NEXT TAILS ANONYMOUS OS RELEASE WILL BE POWERED BY LINUX KERNEL 4.15, TOR 3.2.9

Tails 3.6 recently entered development, and a first release candidate image is now ready for public testing, suggesting the upcoming release will be the first to be powered by the latest Linux 4.15 kernel and

ship with the most recent TOR 3.2.9 client/server technologies for accessing the dark web.

The upcoming Tails OS release is also the first to ship with screen locking support, which apparently can be used even without the root (system administrator) password. Also, there are several upgraded components included, starting with the tails-additional-software package, which no longer blocks the desktop.

Among other updated components that will be included in the upcoming Tails 3.6 release, we can mention the latest Mozilla Thunderbird 52.6.0 email and news client with an AppArmor profile enabled by default for improved security and the Electrum 3.0.6 Bitcoin wallet.

Last but not least, the OpenPGP Applet has been updated to no longer hang when attempting to decrypt significant portions of text from the system's clipboard, and the Tails installer was fixed against bugs that would cause it to crash when used in other languages than English.

Source:  
<http://news.softpedia.com/news/ext-tails-anonymous-os-release-will-be-powered-by-linux-kernel-4-15-tor-3-2-9-520053.shtml>

## **SECURITY RESEARCHERS' WARNING OVER LINUX FEATURE USED IN BIGGEST EVER DDoS ATTACK ON GITHUB**

**T**he distributed denial of service (DDoS) attack targeting Github last week, which at its peak involved 1.3 terabits per second (Tbps) of traffic, has been attributed to the exploitation of a feature that was never intended to be exposed to the internet

The eight-minute attack last Wednesday was more than twice the next-largest ever recorded DDoS attack. It took advantage of the Memcached feature of Linux in an attack described as "memcached amplification".

In these attacks, hackers inundate servers with small UDP-based packets. These are designed in a way so that they look like they

were created by the target of the attack.

Akamai helped GitHub fend off the attack. The company explained that Memcached techniques "can have an amplification factor of over 50,000, meaning a 203 byte request results in a 100 megabyte response."

According to the company's security alerts team, this record will probably be beaten in the foreseeable future. It said: "Because of memcached reflection capabilities, it is highly likely that this record attack will not be the biggest for long."

A day before the hack happened, the company noted a rise in the amount of cyber criminals tapping into this DDoS technique.

The firm explained: "On February 27th, Akamai and other companies announced the discovery of a newly observed reflection and amplification vector, memcached.

"This service is meant to cache data and reduce the strain caused by memory-intensive services.

Memcached can have both UDP and TCP listeners and requires no authentication.

"Since UDP is easily spoofable, it makes this service vulnerable to use as a reflector. Worse, memcached can have an amplification factor of over 50,000, meaning a 203 byte request results in a 100 megabyte response."

Source:  
<https://www.computing.co.uk/ctq/news/3027797/security-researchers-warning-over-linux-feature-used-in-biggest-ever-ddos-attack-on-github>

## **KAOS LINUX SWITCHES TO FALKON BROWSER, MARCH'S RELEASE ADDS KDE PLASMA 5.12 LTS**

**K**aOS 2018.03 is now available for download and it's the first to ship with the recently released KDE Plasma 5.12 LTS desktop environment by default. In fact, the new release includes KDE Plasma 5.12.2 LTS, along with the KDE Applications 17.12.2 and KDE Frameworks 5.43.0 software suites



built on Qt 5.10.1.

Another exciting aspect of the KaOS 2018.03 release is that it ships with the Falkon web browser by default instead of Qupzilla, which was used in previous releases of the GNU/Linux distribution and it's no longer developed. In fact, Falkon is a continuation of Qupzilla, so you'll have to manually migrate your profiles to Falkon.

On top of that, KaOS 2018.03 brings an updated toolchain containing the GCC (GNU Compiler Collection) 7.3.0, Glibc (GNU C Library) 2.26, and GNU Binutils 2.30 packages. The snapshot is powered by the Linux 4.15.7 kernel and Mesa 17.3.6 graphics stack, and includes other updated core components like the systemd 237 init system, Meson 0.45.0 build system, DBus 1.12.6, MPFR 4.0.1, Rust 1.24.1, Libva 2.1.0, and Xorgproto 2018.4.

Last but not least, KaOS 2018.03 is the first release to use the upcoming Calamares 3.2 graphical installer, which introduces numerous attractive features, including a module for the KDE Plasma desktop

environment to allow the selection of the Plasma Look-and-Feel from the installer, experimental LVM, improved detection of keyboard layouts, and much more.

Source:

<http://news.softpedia.com/news/kaos-linux-switches-to-falkon-browser-march-s-release-adds-kde-plasma-5-12-lts-520099.shtml>

## OPEN-SOURCE EXIM REMOTE ATTACK BUG: 400,000 SERVERS STILL VULNERABLE

Administrators are being urged to update email server program Exim, patched in February, to close a remote execution flaw.

All versions of the Exim message transfer agent (MTA) before version 4.90.1, released in early February, are vulnerable to the attack.

Meh Chang from security firm Devcore Security Consulting reported the bug to Exim developers on February 2, and a patch was released five days later. But Chang warns there are still at least 400,000 servers running a

vulnerable version of Exim.

Exim is one of the email MTA services available to use with Ubuntu, while Exim4 is the default for Debian. Exim stands for EXperimental Internet Mailer and was developed at the University of Cambridge in the UK in 1995 for Unix systems as an alternative to Sendmail.

The vulnerability is due to a one-byte heap overflow in Exim's base64 decoding. Chang developed an exploit for it in Debian and Ubuntu that targeted the SMTP daemon of Exim and tricks its memory-management mechanism.

Exim's advisory notes that the remote execution of the flaw "seems to be possible" using a specially crafted message. Its timeline also notes that one of the distributions given restricted access to its security repository almost immediately broke the embargo.

Source:

<http://www.zdnet.com/article/open-source-exim-remote-attack-bug-400000-servers-still-vulnerable-patch-now/>

## UBUNTU 18.04 LTS "BIONIC BEAVER" BETA 1 RELEASED FOR OPT-IN FLAVORS

The official release of the Ubuntu 18.04 Bionic Beaver is due next month. The LTS release will bring the number of bug fixes, improvements, and updates, including Linux Kernel 4.15, Xorg as the default display server, faster boot time, minimal installation, color emojis, etc. With this release, Canonical will also start the collection of some telemetry data from users' machines.

As per the development schedule, Canonical has announced the Ubuntu 18.04 Beta 1 release for opt-in flavors including Kubuntu, Ubuntu Budgie, Ubuntu Kylin, Xubuntu, and Ubuntu MATE. As it's always the case, Ubuntu's primary GNOME flavor isn't a part of the first beta release.

The KDE-based Kubuntu 18.04 arrives with the Plasma 5.12 desktop, along with KDE Applications 17.12.2. It has VLC, Cantata, Muon package manager

as the new default applications for video, audio playback, and installing packages on the operating system.

In Xubuntu 18.04, the GTK Theme configuration tool, Xfce PulseAudio plugin replaces Sound Indicator, Status Notifies Plugin replaces Application Indicator, etc.

Ubuntu Budgie improves on keyboard shortcuts, better font support for Chinese and Korean users, MP3 playback out-of-the-box, new applets, etc.

Source:

<https://fossbytes.com/ubuntu-18-04-beta-1-bionic-beaver-release-download-features/>

## DEBIAN 9.4 STRETCH GNU/LINUX RELEASED WITH 150+ FIXES

One of the great things about using a popular Linux distro is that you keep getting timely upgrades, which ensure that you're running a secure operating system. The same holds true for Debian GNU/Linux, whose development team keeps offering regular

updates. Just a couple of days ago, the team pushed the fourth point release of Debian 9 "stretch."

For those who don't know, Debian 9.0 series is an LTS edition, and it'll remain supported for the next five years.

Debian 9.4 comes loaded with many fixes for security issues and other serious problems. Separate security advisories for each of the security fixes have been already released earlier.

Just like all the other previous point releases, Debian 9.4 shouldn't be seen as a major version as it doesn't come with any new feature. In case you're already running Debian stretch and you've installed all the recommended updates in the past, you won't be missing much.

To be precise, Debian 9.4 comes with a total 89 bug and performance fixes in different packages; there are new upstream versions of Linux kernel, PostgreSQL, Flatpack, etc.

On the security front, there are 71 updates for packages like Tor, Wireshark, Thunderbird, Firefox,

Linux kernel, LibreOffice, Drupal, etc.

Source:

<https://fossbytes.com/debian-9-4-stretch-download-features-update/>

## SPARKYLINUX 5.3 ROLLING LINUX OS DEBUTS BASED ON DEBIAN GNU/LINUX 10 "BUSTER"

SparkyLinux currently comes in two flavors, Stable and Rolling, and while the former is based on the most recent stable release of the Debian GNU/Linux operating system, the latter is usually using the software repositories of Debian Testing. In this case, SparkyLinux 5.3 is based on the upcoming Debian GNU/Linux 10 "Buster" OS.

The SparkyLinux 5 Rolling series hasn't been updated since last December, and the new release brings a recent kernel from the Linux 4.15 series, namely version 4.15.4, the latest stable Calamares 3.1.12 graphical installer, support for the Btrfs and XFS filesystems,

and all the latest updates from the Debian Buster repos as of March 7, 2018.

Another interesting change implemented in the SparkyLinux 5.3 release is the inclusion of the BleachBit open-source system cleaning utility that lets users delete old files and configs from their installations, keeping it clean and light. In addition, the devs purged older configuration files from the installation images.

Other than that, this release adds missing language package installer with support for the GNOME, KDE, and Qt packages, deprecates the GDebi Debian package installer forcing users to install local DEB packages with the "APTus -> Install -> Install package" feature, and reconfigures the MinimalCLI edition to use sudo by default.

Source:

<http://news.softpedia.com/news/sparkylinux-5-3-rolling-linux-os-debuts-based-on-debian-gnu-linux-10-buster-520185.shtml>

## NEW UBUNTU INSTALS COULD BE SPEED UP BY 10% WITH THE ZSTD COMPRESSION ALGORITHM

Developed by Yann Collet at Facebook, zstd is an open-source lossless data compression algorithm designed to offer fast real-time compression and decompression speeds, even faster than xz or gzip. Zstd supports up to 19 compression levels, offering a 2.877 compression ratio with up to 430 MB/s compression and 1110 MB/s decompression speeds.

Julian Andres Klode and Balint Reczey report that they managed to increase the speed of a standard Ubuntu 18.04 LTS (Bionic Beaver) 64-bit installation by about 10 percent with a zstd configuration set at max level 19. Even better, the install speed was increased by about 40 percent when the "eatmydata" library designed to disable fsync and related packages was involved.

Support for Facebook's zstd compression algorithm was implemented in the dpkg and apt command-line package

management systems for Debian GNU/Linux and Ubuntu operating systems. Also, Canonical now plans to enable it by default in future Ubuntu releases, starting with Ubuntu 18.10 this fall, even if zstd is reportedly increasing the installation size by about 6 percent.

Zstd support will also be available in the forthcoming Ubuntu 18.04 LTS (Bionic Beaver) operating system, due for release next month on April 26, 2018. The two developers said that their zstd implementations for dpkg and apt are capable of supporting multiple frames, which means that Debian packages will be eventually compressed and decompressed in parallel.

Source:  
<http://news.softpedia.com/news/new-ubuntu-installs-could-be-speed-up-by-10-with-the-zstd-compression-algorithm-520177.shtml>

## NEPTUNE 5.0 LINUX OS RELEASED WITH KDE PLASMA 5.12 LTS, BASED ON DEBIAN STRETCH

Powered by the long-term supported Linux 4.14 kernel ported from Debian Stretch's Backports repository, Neptune 5.0 uses the latest KDE Plasma 5.12 desktop environment along with the KDE Applications 17.12 and KDE Frameworks 5.43.0 software suites. It also promises new ways to run the latest software versions.

The Neptune developers recommend users to use the Snap, Flatpak, and AppImage universal binary technologies if they want to run the latest apps on their distro, but for now Neptune 5.0 ships with the LibreOffice 6.0 office suite, Chromium 64 web browser, Thunderbird 52.6.0 email client, Amarok 2.9 music player, and VLC 2.2 media player.

Other apps include the GIMP 2.8.18 image editor and viewer, Inkscape 0.9.2 graphics vector editor, Audacity 2.1.2 audio editor, Ardour 5.5 digital audio workstation, Kdenlive 17.12 video editor, Encode transcoding utility, YAVTD tool for downloading videos from multimedia websites, and recffmpeg screenshot tool.

Among other noteworthy

improvements and changes implemented in the Neptune 5.0 "Refresh" release, we can mention a more unified Neptune Artwork theme for GTK2, GTK3, Qt4, and Qt5 apps, the latest Calamares 3.2 graphical installer, as well as tools for those who want to create their own Neptune/Debian-based live ISOs.

Source:  
<http://news.softpedia.com/news/neptune-5-0-linux-os-released-with-kde-plasma-5-12-lts-based-on-debian-stretch-520215.shtml>

## LINUS TORVALDS ROASTS CTS LABS AFTER THEY EXPOSED AMD CHIP VULNERABILITIES

Linus Torvalds doesn't take anything that's being hyped and made bigger than what it is. In a Google+ thread, he slammed the Israel-based security company CTS Labs by calling their security advisory "garbage".

Just a couple of days back, CTS researchers exposed more than a dozen 'critical' vulnerabilities in

AMD chips marketed under the brand names Ryzen and Epyc. The company also claimed that a backdoor exists in AMD processors. Their revelation came with a well-decorated website, a whitepaper, and a video.

"I refuse to link to that garbage. But yes, it looks more like stock manipulation than a security advisory to me," Torvalds said without taking any name or going into specific details.

"When was the last time you saw a security advisory that was basically "if you replace the BIOS or the CPU microcode with an evil version, you might have a security problem"? Yeah," he said in the same thread.

CTS Labs was questioned and faced criticism for notifying AMD only 24 hours before the public disclosure. The company defended themselves by saying that AMD couldn't have fixed the issue even if a year's time was given.

However, this doesn't mean that the bugs disclosed are a hoax. The researchers from the Trail of Bits, Inc. verified them. It's CEO Dan Guido tweeted that the "bugs

are real, accurately described in their technical report (which is not public afaik), and their exploit code works."

While Torvalds agrees that the bugs exist, what possibly annoys him is the hype built around it.

And maybe, if there is any serious threat to the real world or not.

Source:

<https://fossbytes.com/linus-torvalds-roasts-cts-labs-amd-cpu-vulnerability-report/>

## LINUX BEATS WINDOWS TO BECOME THE MOST POPULAR DEVELOPMENT PLATFORM: STACK OVERFLOW SURVEY 2018

Every year, Stack Overflow conducts its developer survey and shares its results with the public for analysis. Expanding its reach, this year over 100,000 developers took part in the 30-minute survey and told how they learn new technologies, which tools they use to get their work

done, and what they look for while hunting some job.

Over the next few weeks, I'll be sharing the different findings of the survey with you and telling you how it compares to the past years' trends. Today, I'll be telling you about the platforms that were most commonly used by the developers over the past year.

If you look at this year's data, you'll notice that 48.3% developers responded with Linux as the platform they have done development work for this year. It was followed by Windows Desktop and Server with 35.4%.

The platforms that follow these top two are Android, AWS, macOS, Raspberry Pi, WordPress, and iOS.

Please note that you shouldn't confuse the most popular coding platform with the operating systems preferred by developers. In that case, Windows still leads that tally with about 50% share. Rest 50% is divided uniformly between Linux and macOS.

Source:

<https://fossbytes.com/linux-most-preferred-development-platform/>

## LINUX MINT 19 'TARA' CINNAMON WILL BE FASTER

Is Linux Mint slow? Hell, no! The operating system is plenty fast. Speed is in the eye of the beholder, however, and the Mint developers apparently thought app-launching seemed slow when using the Cinnamon desktop environment. They didn't have any proof, but they felt that both Mate and Xfce were faster in this regard.

Well, rather than allow their feelings to remain unproven, the Mint devs decided to come up with a speed test to see if they were correct. Guess what? They were! Windows build time was four times slower with Cinnamon compared to Metacity, while recovery time was nearly four times slower too. So yes, app-launching on Cinnamon -- as of today -- is slow comparatively. The big benefit to pinpointing a problem, however, is that it is the first step in solving it. And so, Linux Mint 19 Cinnamon will be faster as a result.

"We developed a little script and a method to measure how

long it took to flood the desktop environment with the creation of 200 windows. We could then measure the time reported by the script to build these 200 windows, and the time it actually took the desktop environment to recover from it and have these windows placed/mapped correctly and ready to be interacted with. Both measures were significantly higher in Cinnamon than in other desktops," says The Linux Mint Team.

After ruling out things like HiDPI support, animations, and applets, the team discovered the problem. They explain, "We then measured Muffin on its own (Muffin is the library used by Cinnamon to implement the window manager, but it can also be run on its own, without the rest of Cinnamon) and found out that although the performance was better than in Cinnamon, the numbers were higher than with Metacity. We therefore had performance issues both in Muffin and in Cinnamon. In Muffin, we were able to apply two upstream commits from GNOME which helped tremendously."

Source:

<https://betanews.com/2018/03/18/mint-linux-slow-fast/>

## ZORIN OS 12.3 LINUX DISTRO RELEASED: DOWNLOAD THE PERFECT WINDOWS REPLACEMENT

While listing out the best distros for a Linux beginner, the ease of use and installation are the most critical factors. Such qualities make distros like Linux Mint, Ubuntu, and Zorin OS the most recommended options. In case you're also concerned about your privacy and security, a shift to the world of Linux becomes a more obvious option.

Calling itself a replacement for Windows and macOS, Zorin OS has been established as a beginner-friendly option that offers a smooth ride while making the transition. The latest Zorin OS 12.3 release works to strengthen the basics of the operating system and polishes the whole experience.

While the number of applications available for Linux distros keeps on increasing each

day, there are some cases when one misses Windows system. To help you out in such cases, the latest Wine 3.0 for running Windows apps has been built into Zorin OS 12.3. This means that you can now enjoy a better experience with Windows apps.

With the addition of Direct3D 10 and 11 support in Wine 3.0, you get access to even a bigger library of games in Zorin OS.

Talking about the looks and feels, with the user feedback, the team has worked to make the Zorin OS desktop more intuitive. Now one can select custom colors to folders and attach file emblems.

In case you're printing a document, a new indicator appears on its own in the panel. You can also use the Windows List layout in Zorin OS 12.3 and pin/label apps directly from the panel.

It goes without saying that the Linux 4.13-powered Zorin OS ships with all the updated packages for a better out-of-the-box experience.

Source:

<https://fossbytes.com/zorin-os-12-3-linux-download-features/>

## AMD PROCESSORS FLAWS: FIRMWARE PATCHES COMING SOON, WON'T AFFECT PERFORMANCE

Last week, the Isreal-based security company CTS labs was trending in the news for disclosing 13 critical vulnerabilities in AMD's Ryzen and Epyc processors—only to be slammed by Linus Torvalds and many other people.

Now, the AMD has come up with a response on the matter. According to a blog post published on Tuesday, the security issues identified by CTS Labs are not related to AMD's Zen architecture or the exploits disclosed by Google.

However, AMD also notes that the vulnerabilities can be leveraged only if the attackers have administrative access (or root access) to the system — an opportunity that allows them to do anything from deleting, creating, or modifying files or folders, as well as changing the settings.

But, modern operating systems

have built-in security measures to prevent unauthorized administrative access. For instance, Microsoft Windows Credential Guard.

AMD will be releasing firmware patches through BIOS updates in the coming weeks to fix the disclosed vulnerabilities classified as RYZENFALL, FALLOUT, and CHIMERA. The company said there wouldn't be any effect on the performance.

Source:

<https://fossbytes.com/amd-processors-flaws-firmware-patches-wont-affect-performance/>

## IoT FUELING ATTACKS ON LINUX DEVICES

**D**oS attacks aren't the only threat the channel needs to worry about when it comes to securing the Internet of Things (IoT). According to WatchGuard Technologies, attacks on Linux devices are on the rise this year.

During Synnex's Red, White & You event in Indianapolis, IN this week, Marc Laliberte, security

analyst at WatchGuard, shared with channel partner delegates the vendor's prediction that by the end of 2018, the number of malware it captures targeting Linux devices will double from 2017. He noted data captured so far is on track to meet this as the trend steadily climbs upwards.

According to WatchGuard's most recent quarterly Internet Security Report, released in December, the number-three threat captured by WatchGuard Firebox Gateway Antivirus was Linux/Flooder, with 1,809,063 instances captured.

However, there are additional threats beyond DDoS, Laliberte noted, pointing out that IoT devices tend to have "quite poor security".

Laliberte also made a push for detection-focused security, lamenting the portion of customers that focus their time and budget on preventing cyber hacks.

He pointed to data finding that in the first half of 2017, there were just under two billion records breached, with 600 million in the

second half. Further, 60 percent of data breaches reported resulted in the loss of an unknown number of records, Laliberte said.

Claiming channel customers typically lack adequate detection tools, the exec noted it takes customers months to detect a breach - in 2016 it took companies on average 201 days and in 2017 190 days.

Source:

<https://www.channelnomics.com/channelnomics-us/news/3028956/iot-fueling-attacks-on-linux-devices>

## BIG MEMORY LEAK BUG FOUND IN GNOME SHELL; MIGHT REMAIN UNPATCHED IN UBUNTU 18.04

**G**nome has been Ubuntu's default desktop environment for a while. Recently, some Ubuntu 17.10 users have started to observe a memory leak issue when running the Linux distro with Gnome Shell 3.26.2.

The bug which was also present

in Ubuntu 17.04 running Gnome Shell 3.23 doesn't seem to be linked to a specific application. It can be reproduced simply by using the system normally. Things as normal as opening the overview, minimizing to dock, switching windows, etc. are enough to trigger the memory leak. It grows over time only to interfere with the users' day to day activities.

Users have reported that the memory consumption could go up to 2GB. However, the issue isn't specific to Ubuntu; it mostly occurs after a Gnome shell animation. For instance, users might see increased memory consumption when pressing and holding Alt+Tab combination with more than 3 apps open.

Gnome developers are working to find the exact cause of the issue which is also present on Gnome Shell 3.28. They released a patch, but the same didn't bring any wonders for the users.

It's unclear whether the memory leak problem will get fixed before the final release of Ubuntu 18.04 LTS in April. The fix for the memory leak could arrive with the next point release for

Gnome 3.28. If not, it would be a part of Gnome 3.30 which is expected to release in October.

Source:

<https://fossbytes.com/gnome-3-26-memory-leak-issue-no-fix-ubuntu-18-04/>

## LINUX MINT 19 "TARA" WILL SHIP IN JUNE, PRE-INSTALLED ON THE MINTBOX MINI 2 PCs

If you're a Mintbox Mini user, you should know that Mintbox Mini 2 is currently in the works and it's coming this summer. It will be based on the Compulab Fitlet2 tiny computer, which suggests that Compulab is once again behind the production of the Mintbox Mini PCs, and will have better specifications and more features.

Compared to the first generation Mintbox Mini, Mintbox Mini 2 features dual-band antennas, two USB 3.0 ports, a microSD slot, audio and micro jacks, and a Kensington lock that's now available on the right side. Two programmable LEDs are

present as well in the front, and the unit is as silent as you'd want it to be.

On the back, the Mintbox Mini 2 offers two USB 2.0 ports, two Gigabit Ethernet ports, an RS232 serial port, as well as HDMI 1.4 (4K@30Hz) and mini-DP 1.2 (4K@60Hz) ports for improved display connectivity. Under the hood, the unit is powered by an Intel Celeron Quad-Core Apollo-Lake J355 CPU with an Intel HD Graphics 500 graphics card.

Connectivity wise, Mintbox Mini 2 offers WiFi 802.11ac and Bluetooth 4.2 support thanks to the integrated Intel 8260 chipset. A 64GB SSD is included by default with 4GB RAM, which is upgradeable to 16GB. The default operating system will be the Linux Mint 19 "Tara" Cinnamon edition.

A Mintbox Mini 2 Pro version will be available as well, featuring 120GB SSD and 8GB RAM. Both the Mintbox Mini 2 and Mintbox Mini 2 Pro will ship with Linux Mint 19 and should be available for purchase worldwide this summer, around June 2018. Mintbox Mini 2 will cost \$299 USD and Mintbox Mini 2 Pro is priced at \$349 USD.

Source:

<http://news.softpedia.com/news/linux-mint-19-tara-will-ship-in-june-pre-installed-on-the-mintbox-mini-2-pcs-520378.shtml>

The founding members of the new foundation include Amdocs, AT&T, B.Yond, Baidu, Huawei, Nokia, Tech Mahindra, Tencent, Univa and ZTE. Others will likely join in the future.

The foundation's first official project is the Acumos AI Project, a collaboration between AT&T and Tech Mahindra that was already hosted by the Linux Foundation. Acumos AI is a platform for developing, discovering and sharing AI models and workflows.

Source:

<https://techcrunch.com/2018/03/26/the-linux-foundation-launches-a-deep-learning-foundation/>

## LINUS TORVALDS SAYS NEW LINUX LANDS NEXT WEEK AND HE'S STICKING TO THAT ... FOR NOW

Linus Torvalds is pretty sure he'll release version 4.16 of the Linux kernel next week.

The development cycle for this version has been quiet. So quiet that Linus' weekly

pronouncements have been brief, dull and unremarkable, just like each weekly code rollup.

But in the last week, Torvalds told the kernel mailing list on Sunday March 25th, “rc7 is much too big for my taste.”

“By this time in the release, things should have calmed down more than they apparently have.”

The problem this week was the arrival of “2.5 weeks worth of networking stuff, and that makes rc7 look artificially bigger.”

“That's my story, and I'm sticking to it.”

Boosting the likelihood of a full release next week is that one of the big patches that bloated this release “is just removing support for the old x86 PPro SMP memory ordering errata workaround that nobody should use anyway.”

The biggest patch, he said, is “a fix for hyperv network device detach events”.

Source:  
[https://www.theregister.co.uk/2018/03/26/linux\\_4\\_16\\_rc7/](https://www.theregister.co.uk/2018/03/26/linux_4_16_rc7/)

## GoScanSSH MALWARE TARGETS LINUX SYSTEMS BUT AVOIDS GOVERNMENT SERVERS

**G**oScanSSH, a new strain of malware written in Golang (Go), has been targeting Linux-based SSH servers exposed to the internet — as long as those systems do not belong to the government or military.

In a new report, Cisco's Talos Intelligence Group explained several other “interesting characteristics” of GoScanSSH, such as the fact that attackers create unique malware binaries for each host that is infected with the malware.

For the initial infection, the malware uses more than 7,000 username/password combinations to brute-force attack a publicly accessible SSH server. GoScanSSH seems to target weak or default credentials of Linux-based devices, honing in on the following usernames to attempt to authenticate to SSH servers: admin, guest, oracle, osmc, pi, root,

test, ubnt, ubuntu, and user.

Those and other credential combinations are aimed at specific targets, such as the following devices and systems: Raspberry Pi, Open Embedded Linux Entertainment Center (OpenELEC), Open Source Media Center (OSMC), Ubiquiti networking products, jailbroken iPhones, PolyCom SIP phones, Huawei devices, and Asterisk systems.

After a device is infected, the malware determines how powerful the infected system is and obtains a unique identifier. The results are sent to a C2 server accessed via the Tor2Web proxy service “in an attempt to make tracking the attacker-controlled infrastructure more difficult and resilient to takedowns.”

The researchers determined the attack has been ongoing for at least nine months — since June 2017 — and has at least 250 domains; “the C2 domain with largest number of resolution requests had been seen 8,579 times.”

GoScanSSH malware scans for additional vulnerable SSH servers

exposed to the internet that can be infected, but it goes out of its way to avoid military or government systems.

Source:

<https://www.csoonline.com/article/3266586/security/goscanssh-malware-targets-linux-systems-but-avoids-government-servers.html>

## AFTER MELTDOWN AND SPECTRE, INTEL CPUs ARE Now VULNERABLE TO BRANCHSCOPE ATTACKS

**W**hat's BranchScope? It's a new side-channel attack discovered by four security researchers from College of William and Mary, Carnegie Mellon University in Qatar, University of California Riverside, and Binghamton University, which could affect devices powered by Intel processors and which may be immune to the Meltdown and Spectre mitigations.

According to their paper, even if they are a bit more sophisticated, the BranchScope attacks can do

the same damage as the Spectre and Meltdown flaws, in the way that an attacker can exploit the security vulnerability to retrieve sensitive data from the unpatched system, including passwords and encryption keys, by manipulating the shared directional branch predictor.

The researchers have demonstrated the BranchScope attack on three recent Intel Core i5 and Core i7 x86\_64 (64-bit) processor families, including Sandy Bridge, Haswell, and Skylake. The worst part of these attacks is that BranchScope can be extended, offering attackers additional tools to perform more advanced and flexible attacks that target even applications running inside Intel SGX (Software Guard Extensions) enclaves.

In their paper, which is a must read if you want to learn everything there is to know about the BranchScope vulnerability, the security researchers have proposed software- and hardware-based mitigations for the BranchScope attacks. Therefore, we expect Intel to release new microcode updates for its processors that also fully patch the

BranchScope vulnerability, so make sure you always keep your systems up-to-date.

Source:

<http://news.softpedia.com/news/after-meltdown-and-spectre-intel-cpus-are-now-vulnerable-to-branchscope-attacks-520433.shtml>

## NEW FIREFOX EXTENSION BUILDS A WALL AROUND FACEBOOK

Mozilla on Tuesday announced Facebook Container, a Firefox browser extension that is designed to segregate users' activity on Facebook from their other Web activity, limiting Facebook's ability to track them and gather personal data.

Mozilla recently has engaged in an aggressive strategy to counter Facebook data management policies that many see as intrusive.

The extension is the culmination of more than two years of research into developing a more private browsing experience,

Mozilla said. However, the organization accelerated its development after the Cambridge Analytica data scandal came to light.

However, the Firefox extension would not affect the type of data access and analytics activities associated with the Cambridge Analytica controversy, the organization said.

The Firefox browser extension works by isolating the user's identity in a separate container, Mozilla explained.

Mozilla does not collect data from customers who use the Facebook Container -- it only tracks how often the extension is installed and removed.

Installation of the extension results in removal of the user's Facebook cookies and logout from Facebook. The next time the user opens Facebook, it will load in a blue-colored tab where the user can navigate the site as usual. If the user clicks on a non-Facebook link, that site will open outside the container.

Source:

<https://www.linuxinsider.com/story/New-Firefox-Extension-Builds-a-Wall-Around-Facebook-85233.html>



# COMMAND & CONQUER

Written by Lucas Westermann

I've always been a strong believer in the phrase "work smarter, not harder". I'm perfectly happy to invest a few extra hours at once in order to make my life easier in the future. This applies particularly to programming and web development tasks. This is why this month's issue will be dedicated to some useful productivity tips to help you to be as efficient as possible when working.

**Disclaimer:** These are all things that work for me - but depending on your preferences or approach to working, you may have your own methods. Feel free to stick with them, or to share them with me.

## WEB DEVELOPMENT

I am a freelance web developer, and, as such, this is the type of project I most frequently have to spin up and work on. I've split the below tips into the different stages of development.

### Creation

- Using something like Yeoman allows me to easily save and create project structures that I can easily re-create. This is terrific for the most popular CMS that I have to work with, or for my prototyping stage. For one-off projects or uncommon environments, the effort to write a generator is not worth it. That being said, if there's a suitable 3rd party generator, I will sometimes give it a shot and tweak from there. For a long time, I simply had a repository with pre-structured project folders and files. I'd then copy them and edit the files. It worked, but using a generator can help to avoid manually editing the files.

- Docker is one of the most useful tools I employ. It does take some time to get comfortable with it (and to find/create images suitable for your work). However, the benefits of being able to easily virtualize an environment for a particular project is immeasurable. Previously, I used to run everything in a single LAMP installation, and that would often run into odd versioning problems as each site would depend on something

different, or, by giving each host a subdirectory, it would require extra tweaks you would later just need to remove. I eventually moved to Vagrant, and now to Docker. This way, I can replicate the target server without interfering with any other development projects, and can ignore other working projects when trying to debug.

- Any local web server - like those supplied with static site generators, or the Web Server for Chrome app. These are terrific because they are easy to fire up, and run on a separate port, avoiding problems with other apps running. I use these largely for static site generators, or for prototypes I have to fire up quickly and whose target server is irrelevant.

### Development

- WebPack is something I switched to from Grunt almost immediately. Not because Grunt was bad, but because of its approach. Being able to use it on those projects where ReactJS is needed makes my life

## Productivity Tips

easier, and having to create and manage only a single configuration file is terrific. For almost all projects, I use it to minify, concatenate, and run postcss on my stylesheets. I also find the structure of the webpack.config.js file to be more understandable than Grunt.

- BrowserSync. For those who don't know of this tool, it essentially spins up a local web server, and then watches the files for changes. This means it can automatically reload your browser when you make changes. I use this primarily for prototyping, because it allows me to edit and work on the files without interrupting the flow to check a browser (which is open and unfocused).

- ImageMagick (or GraphicsMagick these days). This is my go-to solution for batch processing of images, or even just to optimize some files as I develop. I will typically run an extra optimizer for a particular file type (i.e. svgo or jpegoptim) before going live, but while the website is in a state of flux, I'll stick with simple mogrify or convert commands.

- Visual Studio Code. My first reaction wasn't that favourable when this app was released - mainly because I remembered using other Visual Studio apps years ago. However, I eventually gave it a shot and found it to be very similar to Atom (my editor at the time). The major difference I found between Code and Atom was their speed at opening files - Code would load much faster on my machine than Atom. It's still being improved, but their selection of plugins has covered everything I've ever needed.

- dnsmasq is something I've set up on most of my local development machines. I configure it as a DNS where all requests go to the google DNS servers, with the exception of any \*.home.lan URLs, which get redirected to my local machine. This is the internal development URL I use. I also configure my main machine as the DNS server when testing a site on other devices.

- SASS is the preprocessing language I currently use. For a long time, I liked to use Stylus, but realized that it was becoming my default approach to writing CSS. Which is a problem when you're writing actual CSS. Instead, I switched back to SASS in order to

offset the bad habits I was forming. Additionally, SASS is supported by things like sassdoc or KSS to generate a styleguide from your SASS comments.

## Testing

- Testing in web development can often be some of the most frustrating aspects. Not just because each browser can have slight differences, or because of Internet Explorer, but because you also need to check various devices and operating systems. This is where Synergy comes in. Synergy lets you share a single mouse and keyboard between multiple computers over the network. Combine this with a picture-by-picture monitor (or dual monitors), and you can run your tests without sliding between various desks. I used version 1 for a long time without issues. Recently, they've released version 2.0, and I have had a fair few issues with it in ArchLinux. I most recently got it working (2.0.6) by manually running the synergy-core command (see below, and replace <hostname> with your actual computer's name). That being said, some distributions have had fewer issues. In any case, I highly

recommend it (when it's working):  
`/usr/bin/synergy-core --server -f --run-as-uid 1000 --debug DEBUG --name <hostname> --enable-drag-drop --profile-dir /var/lib/synergy --log /var/log/synergy/synergy-core.log -c /var/lib/synergy/synergy.conf --address :24800`  
• Lighthouse is a tool from Google that is integrated into the Chrome browser. It is geared towards Progressive Web Apps, but the information on other aspects (performance, accessibility, best practices) are relevant and useful for any website. Oftentimes, it's similar to PageSpeed Insights, but the rate of development is higher, meaning the information is often more accurate and up to date. It also recently added SEO scoring (Chrome 65). The upside to this, compared to PageSpeed Insights, is that you can run it locally without issues, and it's situated right in your developer tools.

## PROGRAMMING

Some of these points may be similar to the section above, but that is simply for those readers who skipped one section or another.

## Creation

- Similar to above, using something like Yeoman, or empty project structures, can help you get up and running quickly. Especially if you use multiple languages and have trouble keeping the recommended structures straight.
- Virtualenv is python-specific, but it essentially allows you to install a specific version of python into a project which you can use (complete with separate pip installs). This is terrific when you're running older software or something with an older dependency. Other languages also offer some ability to choose older versions (such as ruby version manager).

## Development

- Visual Studio Code or any other editor or IDE. The ability to debug from one application, and to offer things like code autocomplete or syntax highlighting, can be very useful to make sure you're spending less time looking for that missing bracket, and more time coding.
- Grep is something I use almost every day when I'm trying to find a

particular file in a larger project, or when I'm checking for opening/closing brackets. Combined with find, you can typically locate what you're looking for. Most editors also offer a "find in project" option, but if you're not entirely sure where something is, find will serve you better.

- Pastebin is great if you're asking for help or want to share some form of code with another person. Especially if you're posting a long file into a forum, it's best to use something like pastebin.

## Teaching

- I use Kazam for recording my desktop when I want to either record a process for myself, or if I'm trying to explain something to a fellow coder or a client.
- Carbon is a website (<https://carbon.now.sh/>) that allows you to upload code and generate syntax highlighted images. This is terrific for documentation, handouts, or other items that would be useful when explaining your code.

Do you have other time-saving tips or tools you find make life easier? Feel free to share them

with me at [lwest34+fcm@gmail.com](mailto:lwest34+fcm@gmail.com). If I get enough responses, I'll compile them into another article so everyone can benefit. Also, if you have negative experiences with any of the tools or tips I outlined above, let me know!



**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: [lwest34@gmail.com](mailto:lwest34@gmail.com).



# HOW-TO

Written by Rex Guinn

If you're in the UK, then you may be involved in the current (as I write this) panic to become GDPR (General Data Protection Regulation) compliant. The UK's data protection laws were last updated over a decade ago. Now, they're being updated to bring the UK more in line with the rest of Europe, as we exit Europe. Should be interesting.

Anyway, as an experiment (at work), I decided to try full-drive encryption on a Windows 7 machine using Veracrypt. Veracrypt is the successor to the somewhat flawed Truecrypt. Although this tutorial uses Windows 7, the procedure, and software, are exactly the same for Linux.

The basic idea behind full-drive encryption is that you generate a unique key and password. On booting the PC, you must enter the encryption password before the machine will even boot the OS. Once the OS has booted, you log in as normal. And everything looks/feels normal. It's just that

initial encryption password that's the only noticeable difference.

Should anything go wrong at the booting stage, you have a boot disc, which is unique to that machine, which will force the machine to boot as the disc (or USB, I suppose) has the encryption key on it. Even when booting from the disc, you still need the encryption password. So, even if your PC and boot disc were lost/stolen, you're still safe. Well, assuming you didn't cellotape the encryption password to the device...

**NOTE:** please be very careful with full-drive encryption if you are dual-booting Windows and Linux. I have no experience at all with that setup.

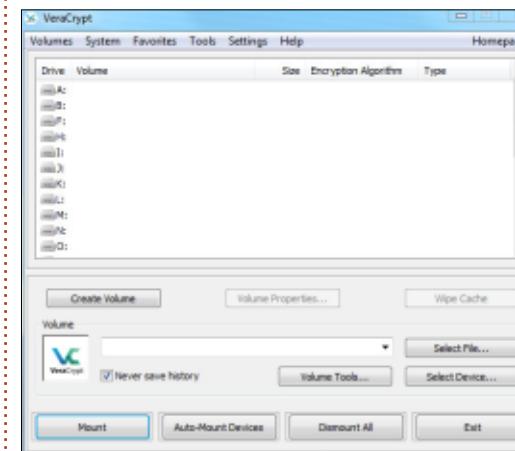
## INSTALLING VERACRYPT

First, I downloaded Veracrypt – which has a version for Windows, Linux, and Mac (even FreeBSD and Raspbian):  
<https://www.veracrypt.fr/en/Downloads.html>

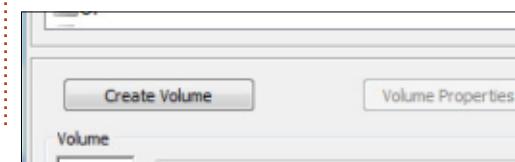
# Full Drive Encryption With Veracrypt

Go through the Install procedure of downloading the archive file, unarchiving it, and running the executable file. Finally, after the install has finished, run Veracrypt.

## GETTING PREPARED



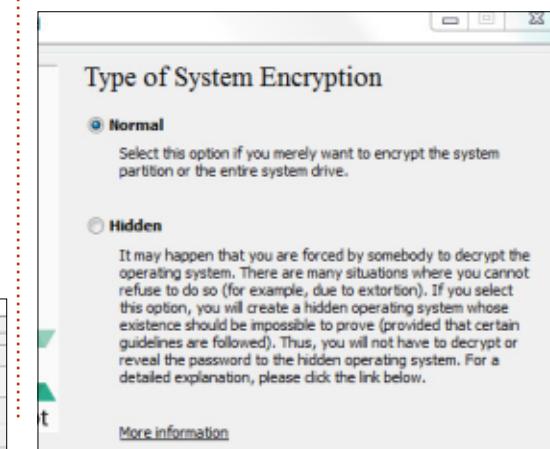
I clicked the 'Create Volume' button. This got me a popup that lets me choose what it is I'm going to encrypt. I chose 'Encrypt the system partition or entire system drive', and clicked Next.



If you were encrypting a USB stick, you'd choose 'non-system partition/drive', and if you were creating an encrypted container to store files in, you'd choose the 'encrypted file container' option.



For type of System Encryption, I chose 'Normal', and clicked Next.



# HOWTO - VERACRYPT

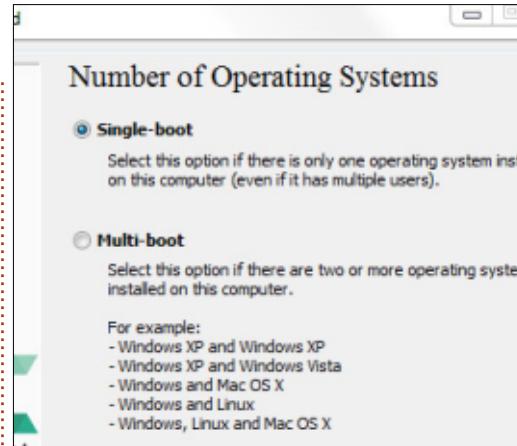
For Area to Encrypt, I chose 'Encrypt the whole drive', and clicked Next.



For Encryption of Host Protected Area, I wasn't sure. So I chose No, and clicked Next.



For 'Number of Operating Systems' - in my case - I chose single-boot, and clicked Next.



For Encryption Options - I kept the defaults (AES and SHA-256), and clicked Next.

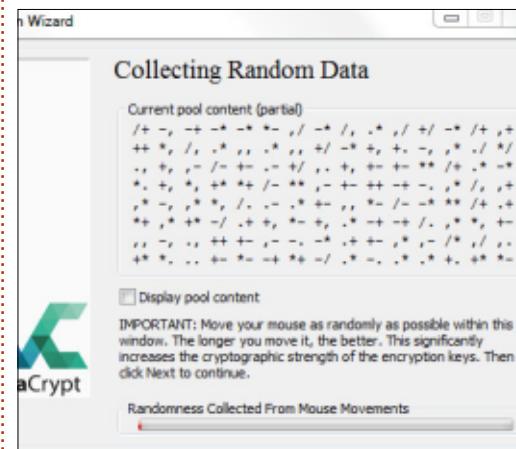


I used a random password generator to create a ten-digit password which I entered here. Then clicked Next.

You'll get a warning for any password less than 20 characters. I'm OK with that in this case.



Collecting Random Data will show gibberish, but you keep moving the mouse to randomise it more. You can keep going until the green bar fills up, or click Next when you're ready to proceed.

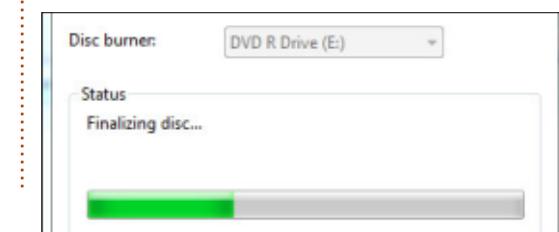


Keys Generated just informs you that you're ready to move to the next step, so I clicked Next.

Rescue Disk is called that for a reason. **MAKE A RESCUE DISK**. Do it just in case of a problem. **DO NOT SKIP THIS STEP**. The idea behind it is that, if there's a problem later on (ie: your drive doesn't boot), then you can use this disk to boot from. The disk apparently has a copy of the keys on it. The combination of this boot disk, with keys, and your password may save your bacon. So make the disk.

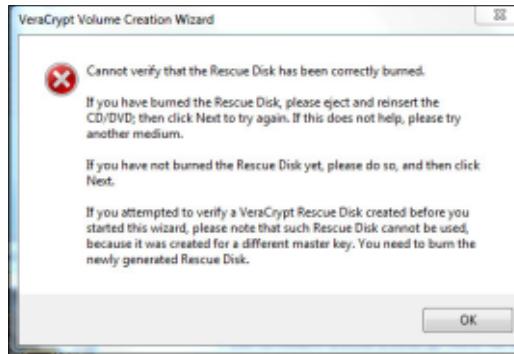


Clicking Next will make it create/burn an ISO (in the chosen directory) which you can burn to CD/DVD/USB.

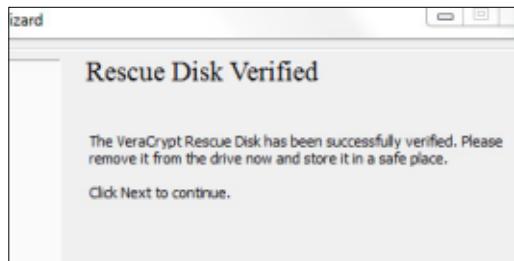


After creating/burning the ISO, I clicked Next.

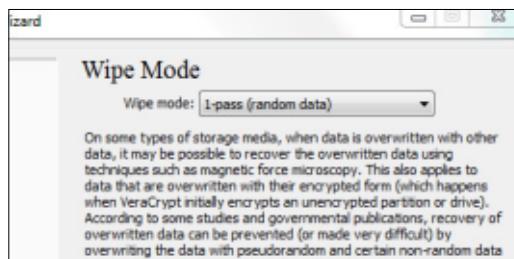
I got an error here, but it just needs the disk/USB ejected and reinserted.



I clicked OK, then Next. My Rescue Disk was verified as good-to-go.



For 'Wipe Mode', I chose 1-pass (with a 500GB HDD in this case)



I then got a warning about 3-pass+ taking a long time to complete.

## PRETEST



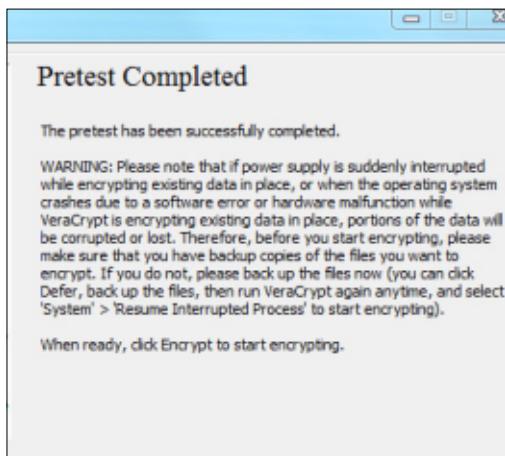
At this point, I clicked Test, and the PC reboots.

As the PC booted back up, it asked for my password. It also asked for a PIM, but, since I didn't provide one, I just hit enter.



The PC booted back up as normal and I logged in as the admin again. VeraCrypt says Pretest Completed.

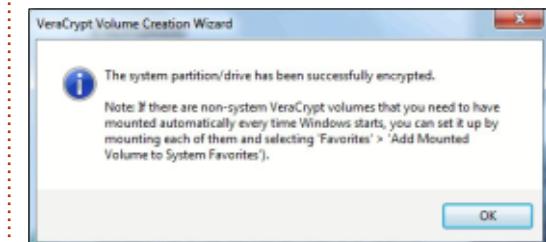
## ENCRYPT!



This is it. Clicking Encrypt (then OK) begins the process. Encryption time will depend upon the power of the machine, and size of the drive.



After many an hour, you'll see a completion message.



I clicked OK and Finish.

And that was it. Done.



**Ronnie** is the founder, and editor, of Full Circle. His other interest is art, and his work can be seen at: [ronniertucker.co.uk](http://ronniertucker.co.uk)



# HOW-TO

Written by Elmer Perry

NEW

# Freeplane - Pt2

One of my favorite uses for mind maps is brainstorming. The idea behind brainstorming is to write my ideas down on paper or screen. I start with the subject as the root topic, create the first subtopic, and then I'm off. I type in the idea and press enter twice to create the next. I will create branches off the subtopic, but I don't branch often. My goal is to get all the ideas down, not develop them. Usually, I brainstorm with a stop time in mind. Whether the time is 5 minutes or 15 minutes, the clock forces me to focus on writing my ideas down. I don't have time for distraction. Once the time is up, I can look at the big picture of ideas. I will see relationships between ideas or notice one idea is actually the child of another. An order or process begins to develop. If I did this on paper, I'd have to redraw the whole map. With Freeplane, I'm able to move the nodes around and reorder them. This is a great time saver. Today, we'll look at how Freeplane lets us organize and manipulate nodes.

## SCROLLING

As your map grows, you will want to zoom in on different sections of your map. Once you zoom in, scrolling the map becomes important. Click and drag a blank spot in the workspace to move the map around. If you have a scroll wheel on your mouse, spin the wheel to move up and down. The SHIFT key + the mouse wheel moves left and right. If the scrollbars are visible, you can scroll with them. From the menu bar, View > Controls > Scrollbars hides and shows the scrollbars.

## ZOOMING

To zoom in and out on your map, hold CTRL + the mouse wheel. From the keyboard, ALT + up arrow zooms in, and ALT + down arrow zooms out. When you need to view the whole map, you can use the menu bar View > Zoom > Zoom to fit to page. You can also select the zoom percentage from the drop-down box in the main toolbar.

## SELECTING NODES

To select a node, hover over it for a few seconds. Once you have the node you want, you can hold the SHIFT key to lock the selection. The selection of the node by hovering requires you to pause over the node. After the selection, you can move across other nodes as long as you don't pause. The selection only changes when you pause over another node. The selected node is highlighted in your system's default highlight color.

You can select many nodes on the same level and branch using the SHIFT key. Select the first node, then, while holding the SHIFT key, select the second node. This selects all the nodes between the two nodes. You select non-sequential nodes and nodes in different branches using the CTRL key. Hold the CTRL key while clicking the nodes.

Use the arrow keys to move around the map without having to grab the mouse. The up, down,

left, and right keys work in the way you would expect them to. Holding down the SHIFT key allows you to select many nodes as you move around the map. CTRL + A selects all the nodes in the map. Press the ESC key to jump to the root node.

## MOVING NODES

Ideas rarely come in the correct order, and you need to move and rearrange the nodes in a map. Freeplane lets you move nodes through the mouse and the keyboard.

**Drop here**  **As a child** 

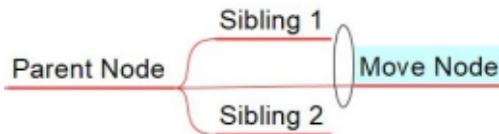
**As Sibling**

**Drop here** 

You can move a node by the drag and drop method. When you drag and drop a node onto another node, you get gray highlights at



the top or on the child end of the node. To insert as a sibling above the node, drop the node on the top gray highlight. If you drop on the end gray highlight, Freeplane adds the node as the last child of the node. Hold down the CTRL key to make a copy of the node instead of moving it. You can drag and drop to the left and right side of the root node. This allows you to balance the two sides of the map when needed.

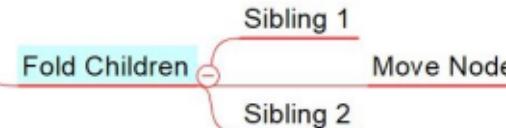


Sometimes, you want to set a node off by itself. You can move a node away from its siblings by hovering over the parent connector end. An oval will appear. This oval is the move handle. Click and drag to move the node to a new location.

From the keyboard, CTRL + the up/down arrows move the nodes up and down among its siblings. CTRL + the left/right arrows promote and demote the node by one level.

## FOLDING/UNFOLDING NODES

### Has Children



### Unfold Children

When working on sections of the map, it helps to collapse or fold the children of other nodes. To fold the children of a node, hover over the connection point for the nodes. A circle with a minus (-) will appear. Click on the circle to fold (or hide) the nodes. When a node's children are folded, Freeplane marks the node with a small circle on the child side. This shows the node has hidden children. You can expand or unfold the node by hovering over the circle. A larger circle with a plus (+) will appear. Click this circle to unfold or show the child nodes. With a node selected, you can use the spacebar to fold and unfold

the children. For more refined control, buttons on the toolbar allow you to fold/unfold one level or all levels. These options are also available in menu Navigate > Fold.

## CORE TEXT AND NODE DETAILS

### Core Text

### Node details

The core text of the node is the main text you enter when you create the node. To see the area for the core text, select the menu Format > Node Core > Bubble. This places a bubble around the core text. To edit the core text, press the F2 key. To replace all the content of the node with new information, start typing with the node selected. If you need to break the core text into many lines, you can use the SHIFT + ENTER key combination. You can edit the core text in an editor dialog using the ALT + ENTER key combination. We will discuss the editor in a later article.

The node details is extra information about the node. The text is placed below the node with a triangle to the left side. Clicking on this triangle shows and hides the node details. From the keyboard, ALT + F2 hide/show the details. Press F3 to edit the node details. You can change the details text in an editor dialog by pressing CTRL + F3.

Freeplane doesn't expect you to get things perfect the first time. In fact, it allows you to drag the nodes around as needed. Whether you prefer the mouse or the keyboard, Freeplane allows you to quickly change your map. In my next article, I will present the 7 guidelines for mind maps from Tony Buzan, and we will explore the Tool Panel.



**Elmer Perry** is a technical support rep for an international keyless access company. He enjoys writing, woodworking, and technology. He lives in Leicester, NC with his wife.



# HOW-TO

Written by Boris Breuer

In the last issue I showed you how to read the voltage with a potentiometer and send the values over the serial line. In this issue we will read the 'state' of a switch using different techniques and take some actions after the state or change of state is recognized. For debugging purposes I will eventually send some messages to the serial line. For the hardware in this article you will need a momentary switch - everyone should have a momentary switch. See

<https://learn.sparkfun.com/tutorials/switch-basics/momentary-switches> for an overview of switches. We will use a similar one like this

<https://www.sparkfun.com/products/97> as it is breadboard friendly and gives a good haptic feedback (clicking sound).

## USING A SWITCH AS INPUT

To read a switch with an microcontroller there are three possible methods.

- Internal pull-up resistor

```
#CHIP tiny13a, 1.2
DIR PORTB IN
SET PORTB = b'11111111'
SET PORTB.4 = 1
```

'enables pull-ups for the whole PORTB  
'enables the pull-up of single PIN (SWITCH)

- External pull-up resistor
- External pull-down resistor
- No resistor. 'There be Dragons' using this method so read this part very carefully.

### INTERNAL PULL-UP RESISTOR

Some AVR and PIC microcontroller have internal pull-up resistors which can be activated. Have a look in the datasheet of your microcontroller if it has one and how to activate the resistor. Mostly they are called 'weak' resistor as their resistance vary with temperature and from part to part. For the microcontroller of choice for this set of articles, the ATTiny13a, there is the Port B data register and data direction register (p. 57 of the datasheet) those have to be initialised as input. If you set a PIN as an input, the pull up resistance is off by default in Great Cow BASIC, so it first has to be

activated. With the internal pull up the microcontroller reads a high value (button not pressed) or low value (button pressed). See the code snippet to activate the internal resistance for the whole PORT or one PIN only in Great Cow BASIC (see code above).

### EXTERNAL PULL-UP RESISTOR

If you experiencing problems with the internal pull-up, as said previously this can be caused by temperature or manufacturing technique, then you can achieve the same outcome by adding an external resistor. A good value for this is 10 kOhm and you can use any quality you have to hand. The external resistor operates the same as the internal resistor but will handle the operating environment: The resistor pulls the signal high (when the button not pressed) and that the input is read low (when the button is

pressed). In this case you can define your inputs as usual without activating the internal pull-ups. Defining the inputs if using a pull-up would be as following in Great Cow BASIC:

```
#CHIP tiny13a, 1.2
DIR PORTB IN
```

### EXTERNAL PULL-DOWN RESISTOR

The pull-down resistor operates in the opposite manner to a pull-up resistor, instead of pulling the signal high (Vcc) you pull the signal low (GND). The resistor pulls the signal low (when the button not pressed) and that the input is read high (when the button is pressed). Again, the recommended resistance is a 10 kOhm resistor. The inputs are defined the same way as with the external pull-up resistor. Defining the inputs if using a pull-down resistor would

# HOWTO - GREAT COW BASIC

be as following in Great Cow BASIC:

```
#CHIP tiny13a, 1.2  
DIR PORTB IN
```

The question is now, are there any differences between the pull-up and the pull-down resistance in software other than the name and the opposite direction with respect to Vcc and GND? Yes. If you read a switch which uses a pull-up resistor, the signal is inverted. A high value means the button is not pressed (FALSE) and a low value means the button is pressed (TRUE). If you consider to connect your switches through a pull-down resistor the high value is button pressed (TRUE) and in case of the low value the button is not pressed (FALSE). In pseudocode it would be as shown below.

## No RESISTOR

If you reckon reading the switch

```
'inverted (PULL-UP*)  
IF buttonpressed = false  
THEN  
    DoSomething  
END IF
```

\*This is true for the internal as well for the external pull-up.

without any resistor by its own, this could be called the fourth method, but this is not a good technique. It means connecting Vcc and GND through a switch on your input PIN, which is also known as shortcut. A pull-up resistor puts an input to a known state.

## DEBOUNCING

Switch debouncing is one of those things you generally have to live with when playing with switches and digital circuits. If you want to input a manual switch signal into a digital circuit you'll need to debounce the signal so a single press doesn't appear like multiple presses.

Another problem regarding switches is, that the state of the switch is floating: The signal is not as accurate as it should be and the microcontroller reads false positives or false negatives. Maybe

```
'not inverted (PULL-DOWN)  
IF buttonpressed = true  
THEN  
    DoSomething  
END IF
```

the switch produces a signal while you push it down, or it produces a signal while the button goes up - how would you identify this? Is the button pressed or not? For such problems you have some options to solve this, the technique is called debouncing.

As with many topics, there exist several methods to debounce switches, in hardware, e.g. with a RC-Filter or you could use a specialised debouncing IC. Supplementary there exist several approaches to achieve the debouncing as a software method, as well. The goal of both ideas is that the transitions of the button would be clearly recognized. I will go the software route which seems sufficient to me. If the shown example does not fit your needs, please do a research, to find the right one for your specific application field.

## SIMPLE DEBOUNCING METHOD

The simple version of a debouncing routine for a switch connected through a pull-up resistor would be something like this, for debugging purposes I

provided some output via serial connection (code shown next page, left side).

Just in case you find the non-inverted signal easier and do not want to use the internal pull-up resistors, you would debounce an external pull-down resistor like that shown next page, right side.

Both methods read the state of the switch at the very beginning of the program start, if it is pressed the variable button is initialised as zero. Then, the switch is re-read in a loop and the variable button is incremented by 1 as long the button is pressed. The short time out of 10 ms to let the signal settle and to make sure to read the correct state. If the button is pressed long enough the LED is switched on or off.

## BREADBOARD CIRCUITY

At first you see the breadboard assembling for the simple debouncing method. Compile the program and flash it to the ATtiny13a with your hardware programmer of choice. Connect the LED in the right direction to PortB.0 (PB0). Connect one end of

# HOWTO - GREAT COW BASIC

```
#chip tiny13a, 1.2
#Option Explicit
#Option Volatile LED

#include <SoftSerial.h>
#define SER1_BAUD 9600
#define SER1_TXPORT PORTB
#define SER1_RXPIN 1

#define TOGGLE PORTB.0
#define LED PINB.0
#define SWITCH PORTB.4

dim button as byte
dir toggle out          'LED
dir switch in
set switch = 1

'main program:
do    'check if switch is pressed (0 = ON):
    if switch = 0 then
        button = 0
        do while switch = 0
            wait 40 ms
            ser1print "Button pressed"
            ser1send 13
            ser1send 10
            button = button + 1
        loop
        ser1print button
        ser1send 13
        ser1send 10
    end if

    if button > 3 then
        toggle = !led
        ser1print "." "if something is wrong with the LED
when pressing the 'button, the dots should appear on the
serial monitor"
    end if
loop
```

```
#chip tiny13a, 1.2
#Option Explicit
#Option Volatile LED

#include <SoftSerial.h>
#define SER1_BAUD 9600
#define SER1_TXPORT PORTB
#define SER1_RXPIN 1

#define TOGGLE PORTB.0
#define LED PINB.0
#define SWITCH PORTB.4

dim button as byte
dir toggle out          'LED
dir switch in
set switch = 1

'main program:
do    'check if switch is pressed (1 = ON):
    if switch = 1 then
        button = 0
        do while switch = 1
            wait 40 ms
            ser1print "Button pressed"
            ser1send 13
            ser1send 10
            button = button + 1
        loop
        ser1print button
        ser1send 13
        ser1send 10
    end if

    if button > 3 then
        toggle = !led
        ser1print "." "if something is wrong with the LED
when pressing the 'button, the dots should appear on the
serial monitor"
    end if
loop
```

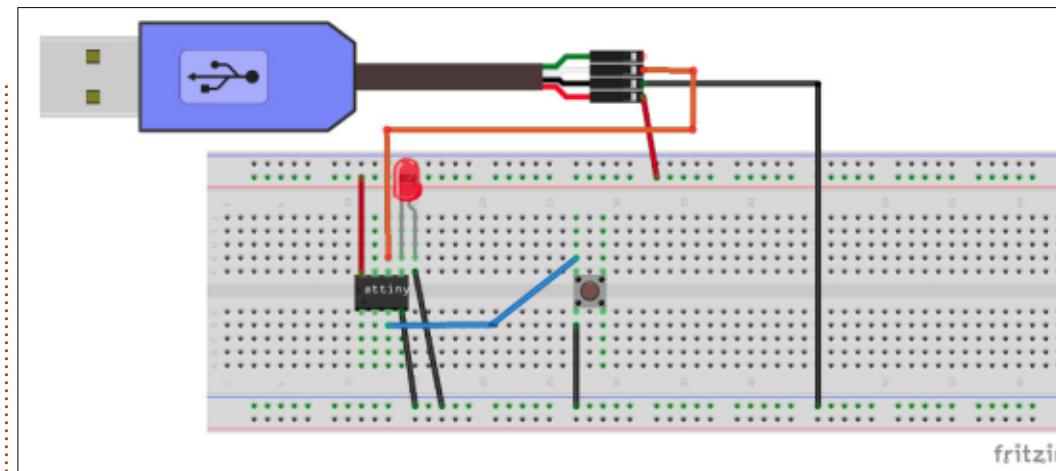
# HOWTO - GREAT COW BASIC

the switch to PortB.4 (PB4) and the other end to GND. For the first example I used the internal pullup as a showcase. The connection to the serial adapter gives the chance to debug and it can power the entire circuit.

For the pull-down version compile the code and flash the ATTiny13a like before. Connect one end of the switch with 5 V and add a wire to PortB.4 (PB4) inbetween. The other end of the switch connects to ground (GND) through a 10 kOhm Resistor.

## CONCLUSION

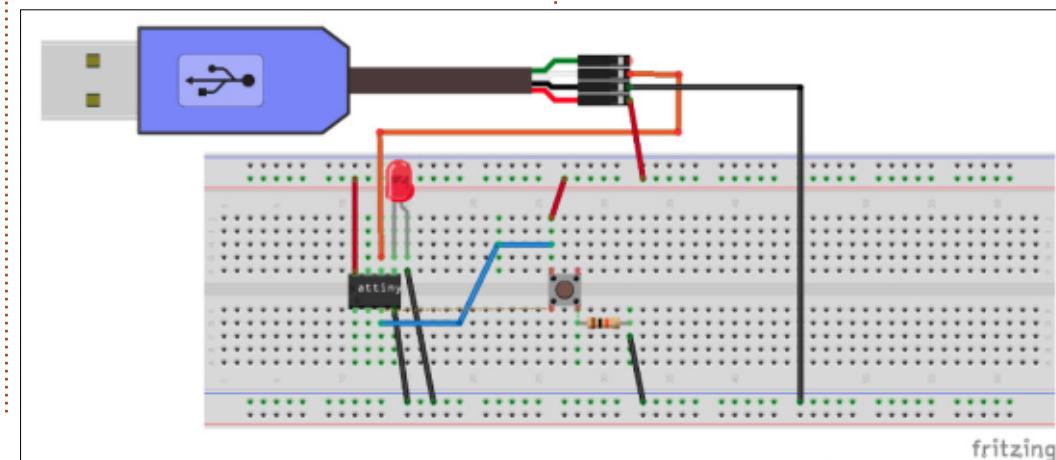
The ability of a microcontroller of any brand to read a switch in some way is important to control the various functions of the microcontroller. If you will be not able to give the microcontroller some sort of input, the processing and output of data is impossible. And you would not always want a small project, e. g. a night light, having to connect to your computer just to switch the LED on or off, would you? Because of the speed of the microcontroller the button presses in these examples are recognized very often and only



at program start. In the next article I will examine a method to overcome this and will introduce you to interrupts of a microcontroller in general and in Great Cow BASIC in special.

## SOURCES

If you want to download the sources instead of copy-pasting it, you can now check it out with git or an SVN client. Have a look at <https://github.com/Anobium/Great-Cow-BASIC-Demonstration-Sources/tree/master/Publication%20Solutions/Full%20Circle> for more information.



**Boris** holds a bachelor degree in business administration and works for an insurance company. While not working, he is a family person and enjoys playing with his kids or tinkering with his personal projects. Contact info and additional material at his site: <https://www.evil-publishing.de/fcm>



# HOW-TO

Written by Mark Crutch

Continuing from last month's introduction to extensions in Inkscape, this time I want to point out a few little utility extensions that can make some seemingly minor tasks a whole lot easier to achieve than would be possible with Inkscape's native tools.

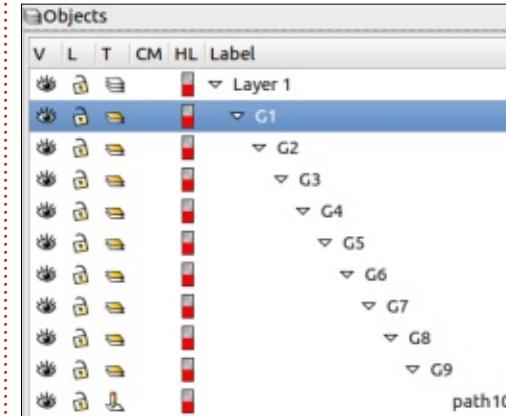
Starting at the top of the menu, we find Arrange > Deep Ungroup. As its name suggests, it ungroups any grouped objects it finds, with the "deep" part indicating that it then continues down, ungrouping any groups that were nested inside those groups, then any groups within groups within groups – and so on, until every group in your document has been expanded back to its constituent objects. It can be particularly useful when importing SVG files from other programs, some of which nest groups to such



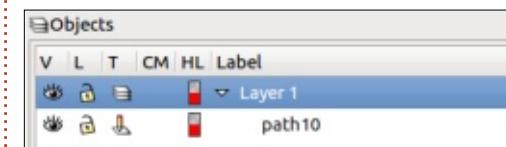
an extent that it becomes difficult to edit the content with Inkscape.

Most of the time, the default options in this extension are fine. With nothing selected on the canvas, it will ungroup everything across all layers, no matter how deep (well... up to 65535 levels deep, which may as well be infinite in SVG terms). Be warned, however, that this will even remove any layers you have (since layers are just groups with extra attributes). You can limit its effect by selecting specific groups to operate on before running the extension.

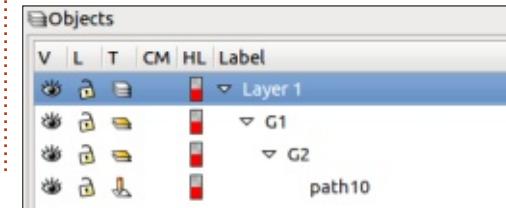
Whilst selecting specific groups lets you restrict the "breadth" of the changes, changing the values in the dialog lets you adjust the depth of nesting that will be affected. To demonstrate, I've put a single object inside a group, which is inside a group, which is inside a group... to 10 levels of nesting. The structure in Inkscape can be seen using the Object > Objects dialog (see part 63 of this series):



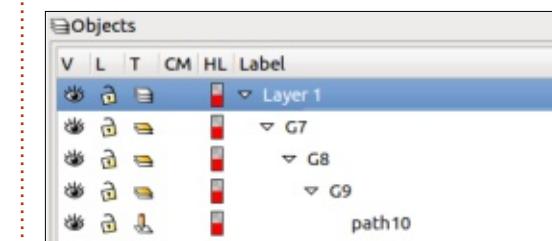
Using the default values, with nothing selected, breaks my path out of its deeply nested jail, and throws away the layer to boot. Better to select the topmost group, which breaks the path out whilst still leaving the layer intact:



Change the Starting Depth parameter to 2, however, and the first two levels of grouping are left intact:

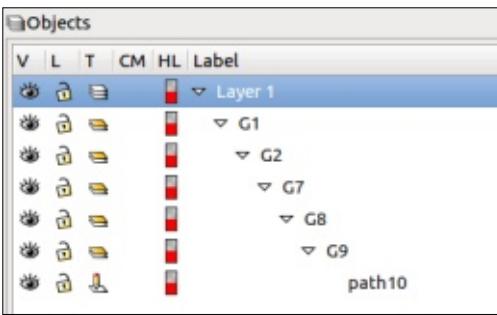


With the starting depth back at 0, but the Stopping Depth at 5, I get this (note that it's actually removed 6 levels of grouping as this figure appears to use "programmer's numbering" where the count actually starts at zero):



Exactly the same result can be achieved by setting the Stopping Depth back to 65535, and setting the Depth to Keep to 3. The difference is whether you want to start at the outermost group and count the levels down, or start at the innermost group and count up. I advise setting only one of these fields, leaving the other at 65535 (Stopping Depth) or 0 (Depth to Keep), as it's not clear how they interact with each other. You can, however, combine one of these fields with the Starting Depth to keep the top few groups and the deepest groups, whilst chopping

out all the ones in the middle. This can be useful when a file contains a lot of redundant nesting and you want to simplify it down without losing too much structure. For example, with the Starting Depth at 2 and the Depth to Keep at 3, my file ends up like this:

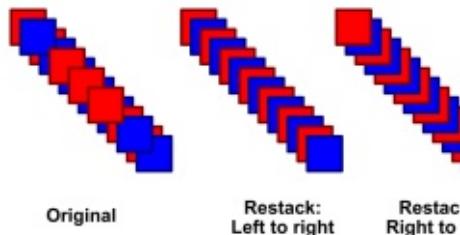


Having removed all the groups in your document, you may now be faced with a whole load of individual objects that aren't necessarily arranged the way you want them to be. Their position on the canvas should still be the same as it was when they were grouped, but their position in the z-stack could be all over the place. Much of the time this won't matter, but, when objects overlap, or you need to use them in Boolean operations, the z-order can matter immensely. That's where the Arrange > Restack extension comes into its own.



In normal operation, this extension changes the z-index on each element based on its coordinates. With the settings shown here, for example, the object whose top left corner (the Object Reference Point) is furthest to the left will be moved to the bottom of the stack, with each subsequent object from left to right being placed on top, until the object whose top left corner is furthest to the right is placed on the top. Changing the Restack Direction popup lets you change that left to right ordering so that the stacking runs from right to left, top to bottom, or bottom to top. If none of those suit, you can use the Custom tab to choose an angle that works with your design. For restacking objects that are more circularly arranged, there are even options for Radial Outward and

Radial Inward. In short, this extension lets you trivially achieve this:



If your objects are already stacked in a sensible order, there are really only two things you might want to do with them: reverse the order, or randomise it. Both of these operations are also available in this extension, by switching to the "Based on Z-Order" tab.

The Modify Path or Visualise Path submenus seems like good places to look for useful utilities, but so useful are the tools in them that many have been re-implemented as Live Path Effects in recent releases, and it's usually best to use the LPE versions. Don't forget you can use 'Path' > 'Object to Path' to "set" the results if you don't want them to be "live". For example, you can find both Envelope and Perspective extensions in the Modify Path

submenu, each of which requires a source path to distort, and a four-node guide path to distort into. But they have different ideas about the order of the nodes in the guide path, and whilst Envelope will happily distort a group of paths, Perspective won't, requiring you to ungroup and union the paths into a single object first. Far better to use the Perspective/Envelope LPE which avoids all these problems, and has the advantage of being able to interactively adjust the guide path.

Although Scribus makes for a far better desktop publishing program, Inkscape is sometimes put to use for producing flyers or leaflets – and maybe even the occasional newsletter (although the lack of multi-page support would seem to limit its usefulness in that regard). It can also be a handy tool for mocking up a website layout. One thing that unites all these tasks is the need to lay out sections of text, either as real content itself, or as a placeholder to indicate where the real content will go. The Text submenu offers a few extensions that may help.

For placeholder text, it's hard to

beat the classic “lorem ipsum” prose – a passage of nonsensical Latin that has traditionally been used for this purpose. You could go online to one of the many lorem ipsum generators, then copy and paste the text into Inkscape, or you could just use the Text > Lorem Ipsum extension. A word of caution though: this extension produces flowed text, which makes it great for mocking up a website, but no good for actually putting online. Use the ‘Text’ > ‘Convert to Text’ menu option to fix it as normal, non-flowed text (see part 10 for more details).

Perhaps the most useful utilities in this submenu are those for dealing with small amounts of text that are already in a document. If you have several pieces of text that you want to use in another program, rather than editing each of them to copy the content to the clipboard one-by-one, the Text > Extract extension offers a means to pull out any text it finds in the page or selection, then present it to you concatenated into a single block of ASCII text in a dialog. From there you can easily copy and paste the entire text as one.

Conversely you might want to join several smaller pieces of text into a single object within Inkscape. This can be the case when importing a document from another program, as sometimes lines of a paragraph are stored as separate text elements in the SVG file. It seems to be a particular issue with PDF files. In this case, select all the text that should be joined and use Text > Merge. In almost all cases the standard settings are fine, and it will result in your text being duplicated as a single block at the top left corner of the document for you to then adjust and position as you see fit.

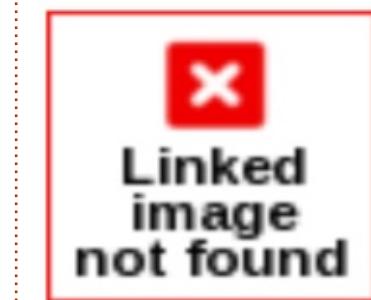
The counterpoint to Merge is ‘Text’ > ‘Split Text’. This allows you to break a single text object into several separate objects, splitting by line break, word break, or even into individual characters. The styling and positioning of the text will often be lost in the process, though. One use I’ve had for this in the past is to split a too-long speech bubble in a cartoon into separate lines; they can then be rearranged to fit over two or three individual bubbles, and Text > Merge used to turn each group of lines back into a single text object.

As well as not being a great DTP program, Inkscape is also a pretty poor choice for dealing with raster images (also known as bitmap images, though that term should not be confused with the image format of the same name that is common in the Windows world). Still, people persist in doing so, so I’ll finish this month with a quick look at the extensions that might help if you really want to go down that route.

As you may recall from part 15 of this series, when adding a raster image to Inkscape you have the choice to either embed it (in which case the raw bitmap data is included within your SVG file), or link to it (in which case the SVG contains the URL or path of the file). Embedding makes your SVG file more portable, at the expense of file size. Linking also has the advantage that edits made outside of Inkscape are automatically reflected in your document. One useful approach, therefore, is to link by default, but embed the final version of the image if you have to send your file to someone else. The Images > Embed Images extension will handle this for you.

On the other hand, if you have a

file with embedded images, the Images > Extract Image extension will save them to your hard drive and automatically replace the copy in your document with a link to the newly saved file. Note that it works with only one image at a time, and doesn’t complain if you have more than one selected, preferring to extract only the first one. If you subsequently need to move the saved files, you’ll see the following error image in Inkscape, in place of the missing file:



If you do see this, just right-click on it and select “Image Properties” in the context menu, then edit the path to match the new location of the file. In recent versions of Inkscape, you’ll also find that Embed Image and Extract Image have made their way to this context menu. It doesn’t matter whether you use those options or the extensions, the end result is the same.

When dealing with raster images, you might be tempted by some of the options in the Raster submenu. My advice is to steer clear of these. They generally apply filters to your raster image (embedding it in the process, if it's a linked image) – but these are not the editable SVG filters that you would find in Inkscape's Filters menu. Instead, they are bitmap filters whose effect is to destructively change the pixels in your raster image. In that respect they're no different to the result you would get if you just edited the image in an external program such as The GIMP, except that the range of filters available in a true raster editor vastly outweighs the paltry selection exposed as Inkscape extensions. Better to copy your original image to a new name, link it into Inkscape, then play around with the filters in a dedicated raster graphics program.

## FULL CIRCLE WEEKLY NEWS

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



# RESEARCHING WITH LINUX

Written by S. J. Webb

Back next month



**SJ Webb** is a researcher coordinator. When he is not working, he enjoys time with his wife and kids. He thanks Mike Ferarri for his mentorship.



# EVERYDAY UBUNTU

Written by Richard Adams

Any operating system that exists on a computer depends on the availability of useful applications to make the operating system, well, useful. Fortunately, there is now a LOT of software available on Linux, and most of it is free. If you use a Linux application, you should, of course, strongly consider making some kind of payment to the author/creator, so they can continue creating new applications or upgrading their existing ones. It's supposed to be free as in freedom, not free as in beer (at least, in most cases). Now that we learned the basics of software installation (last month – FCM #130), we can think about what, exactly, to actually install.

One of the first things you may want to install is an office suite. There are a number of office suites available, but I personally go with LibreOffice and Calligra Office.

LibreOffice is a 'fork' from the venerable open source suite, OpenOffice, which does still exist but seems to have less development going on now than

LibreOffice. 'Forks' are new versions of projects derived from existing code, and one of the unique and cool features of open source software. Anyone with the inclination can download the source and change it to their liking, so 'forks' are much more common in Linux than in a more closed source infrastructure like Windows or MacOS.

The screenshot shows the LibreOffice Writer interface. The top menu bar includes File, Edit, View, Insert, Tools, Format, and Help. The toolbar below has icons for document, page, orientation, zoom, and various text styles. The main text area contains a paragraph of text. To the right is the 'Properties' panel, which is expanded to show the 'Character' tab. Under 'Character', the font is set to 'caslon 540' at size 14. Below that are buttons for bold (B), italic (I), underline (U), and strikethrough (S). The 'Paragraph' tab is also visible, showing options for alignment, spacing, and indent. At the bottom of the screen, a status bar displays 'Page 1 of 4', '1,641 words, 10,010 characters', 'Default Style', 'English (USA)', and a zoom level of 85%.

OpenOffice and LibreOffice development seems to have a philosophy of continuing to refine the existing features of the suite and correct bugs, which is not terribly exciting and may not generate enthusiasm like in the earlier days of the suite when new features were common with version upgrades, but there's certainly something to be said for

making the project more polished. They also seem to put an emphasis on format compatibility with Microsoft Office files. I've been following OpenOffice and/or LibreOffice since OpenOffice version 1, and I have a lot of respect for it. It is available for Windows, MacOS, or Linux.

LibreOffice includes a word processor (Writer), spreadsheet (Calc), presentation program (Impress), drawing program (Draw), and a database front end (Base). This column is put together every month in LibreOffice Writer. The applications are of excellent quality, solid and reliable, and fulfill the needs of most office users quite admirably with the exception of having no email client/personal information manager. OpenOffice originated from the commercial office suite StarOffice, now discontinued. This column in LibreOffice Writer:

Calligra Office is also a 'fork', in this case from the original KOffice that was part of the KDE project. KDE is a desktop environment available to Ubuntu users most readily in the form of Ubuntu's variant, Kubuntu. Where the Unity desktop environment resembles the MacOS, KDE hews more closely to a Windows look. KOffice was originally developed by the KDE team to go along with the KDE environment.

The big advantage to KDE, in my estimation, is that it has more applications and functionality than LibreOffice and OpenOffice. Calligra has a word processor (Words), a spreadsheet (Sheets), a presentation program (Stage), a drawing program

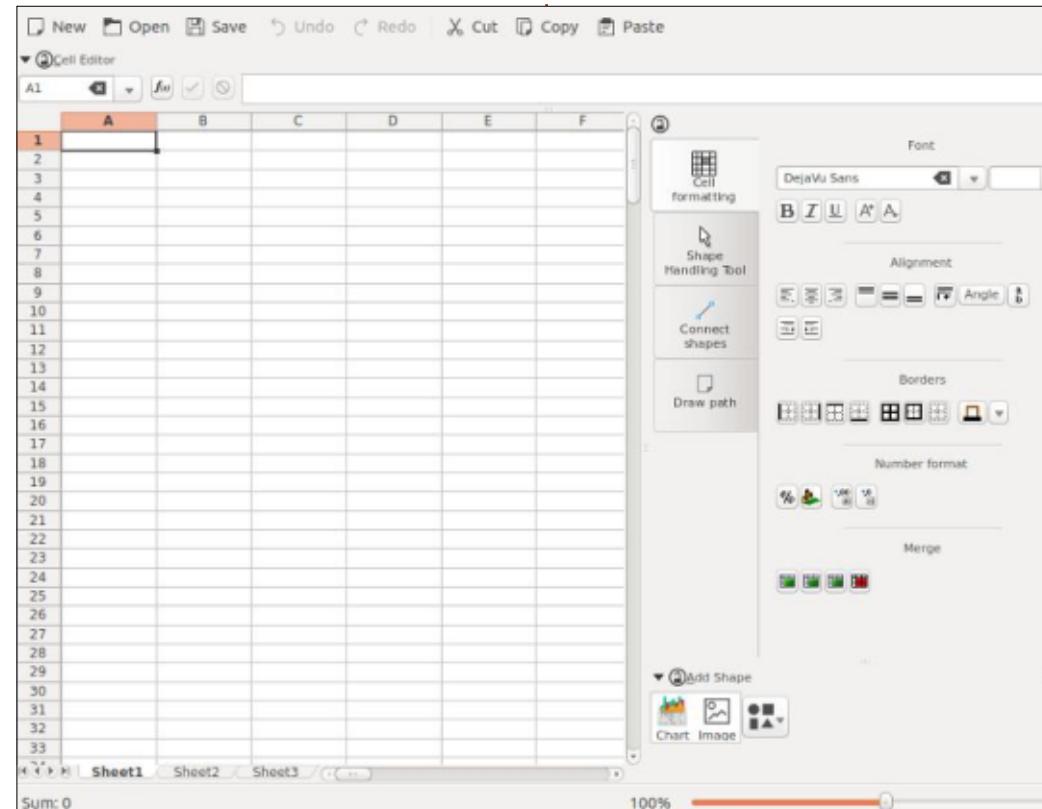


environment available to Ubuntu users most readily in the form of Ubuntu's variant, Kubuntu. Where the Unity desktop environment resembles the MacOS, KDE hews more closely to a Windows look.

The big advantage to Calligra Office, in my estimation, is that it has more applications and functionality than LibreOffice and OpenOffice. Calligra has a word processor (Words), a spreadsheet (Sheets), a presentation program (Stage), a drawing program (Krita), and a database front end (Kexi), like LibreOffice. But it also has an email program/personal information manager (Kontact), a bitmap drawing program and photo editor (Karbon), a project manager (Plan), a diagramming and flowcharting program (Flow), a whiteboard emulator (the unwisely named Braindump), a personal finance manager (KMyMoney), and even a recipe manager (Krecipe). The last two are kind of nominally members of the suite, but worth mentioning all the same. To me, the addition of analogues to Project, Visio, Outlook, and even OneNote (sort of, in the form of Braindump) is a major plus for Calligra over LibreOffice. There's even a second word processor

specialized for book and ebook writing projects, called Calligra Author. It does seem that Braindump and Author have reached a developmental dead-end and are no longer actively being worked on, and the Krita drawing(bitmap editing program has spun off into an independent project. Flow and Stage also seem to be currently in a development limbo of sorts. Here's Calligra Sheets:

We'll be looking at office suites



in considerably more detail in a later column. We'll also look at alternatives to Microsoft Office's Visio and Project applications, in the form of Calligra Office's Flow and Plan, and the independent applications GanttProject and Dia.

OpenOffice is at  
<http://www.openoffice.org/>.

LibreOffice is at  
<https://www.libreoffice.org/>.

Calligra Office is at  
<https://www.calligra.org/>.

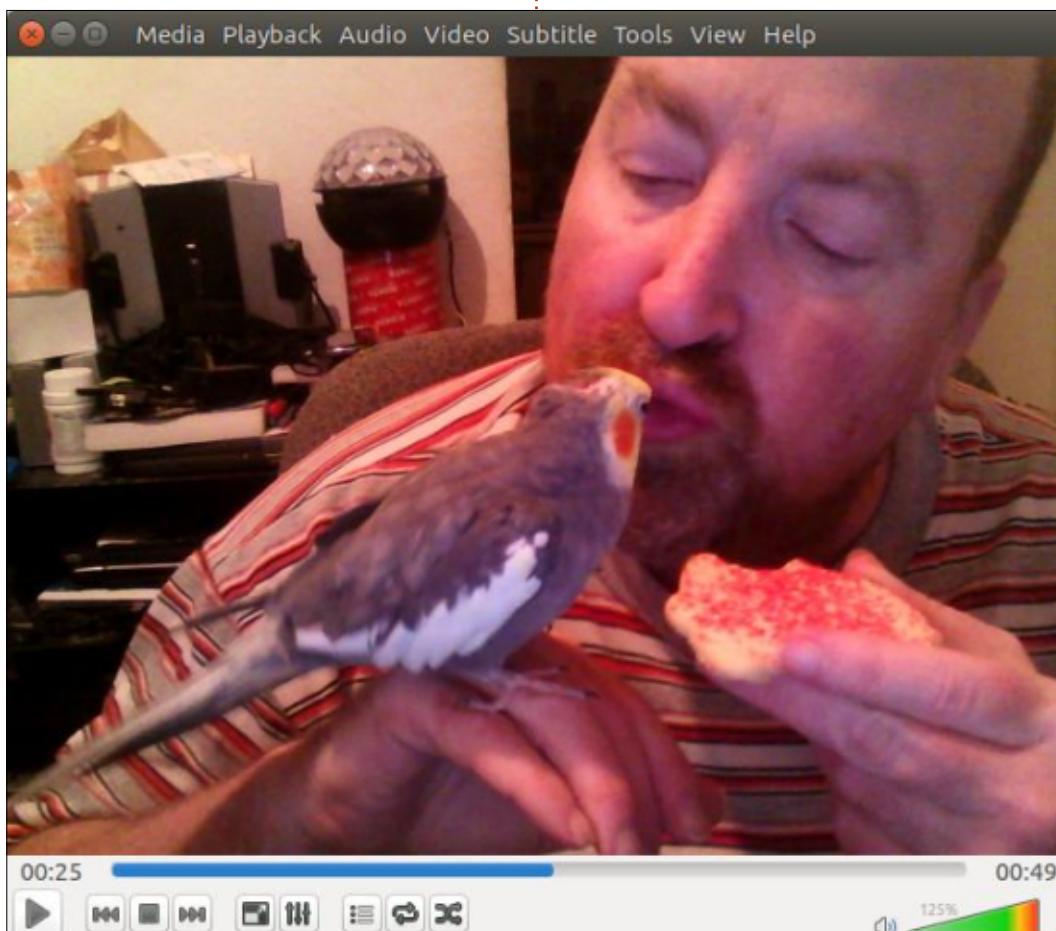
Media players are also pretty essential to the everyday user's desktop. I always install VLC, which seems to be widely regarded as one of the best media players, and is available on multiple platforms. I also use Kaffeine, Dragon Player, Amarok, and Rhythmbox. VLC is particularly well-respected for the fact that it will often play broken or incomplete files, at least to the extent that such a thing is even possible. Kaffeine and Dragon Player are excellent multimedia players for video or audio, while Rhythmbox and Amarok are more focused on audio files. K3B is a good burner application to install if you need to burn CD-R's or DVD-R's. There is also KSCD to play music CD's, if anyone still has those in our modern digital age. For my part, I still have the long out-of-print "Hey Man, Smell My Finger" and "Millennium" on CD's, by George Clinton and Earth, Wind, and Fire, respectively, and I believe they're worth about \$300 each as collector's items. Yeah, I won't be playing those in KSCD and risking scratching or scuffing them by handling them. May not be long until almost all CD's are antiques and collectibles. Here's a look at VLC, playing a movie of my adopted son, Baby, giving me some



sugar:

Another category of basic software is internet/connectivity applications. For internet browsing, I prefer Firefox and Chrome, alternating between the two from time to time (although I'm a bit more partial to Chrome). A huge advantage here is that you can use either browser in multiple environments, so you have a fairly

consistent experience from Windows, Linux, MacOS; and even ChromeOS, and on an Android phone or tablet in the case of the Chrome browser. In addition, if you care about open sourcing of the applications you use, there is an open source version of Chrome called Chromium. All (Firefox, Chrome, and Chromium) support user sign-on, which means you can see your favorites/bookmarks from



full circle magazine #131

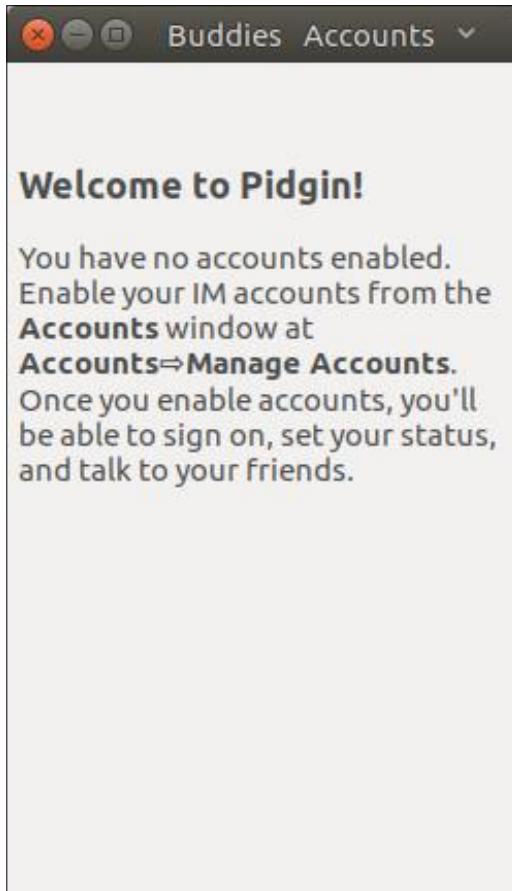
different machines and platforms, and retain your interface tweaks and customizations without constantly redoing them every time you log on to a different computer. Chromium will allow you to log in via your Google/Chrome login credentials. This is what Chromium looks like:

There are also a number of instant messengers available under Linux, I choose Pidgin and Skype for my usage (although I instant message very infrequently, due to

not having persistent internet capability). You may already have detected a theme here: I will very frequently install two applications or suites for any function, knowing that there are advantages and disadvantages to each, and that I can switch to whatever works best for a given task. Pidgin works with a number of instant messaging protocols, so it can be used to chat with users on AIM, ICQ, MSN Messenger, Yahoo, Facebook, and others, so it has a lot of flexibility. It also has a number of compelling

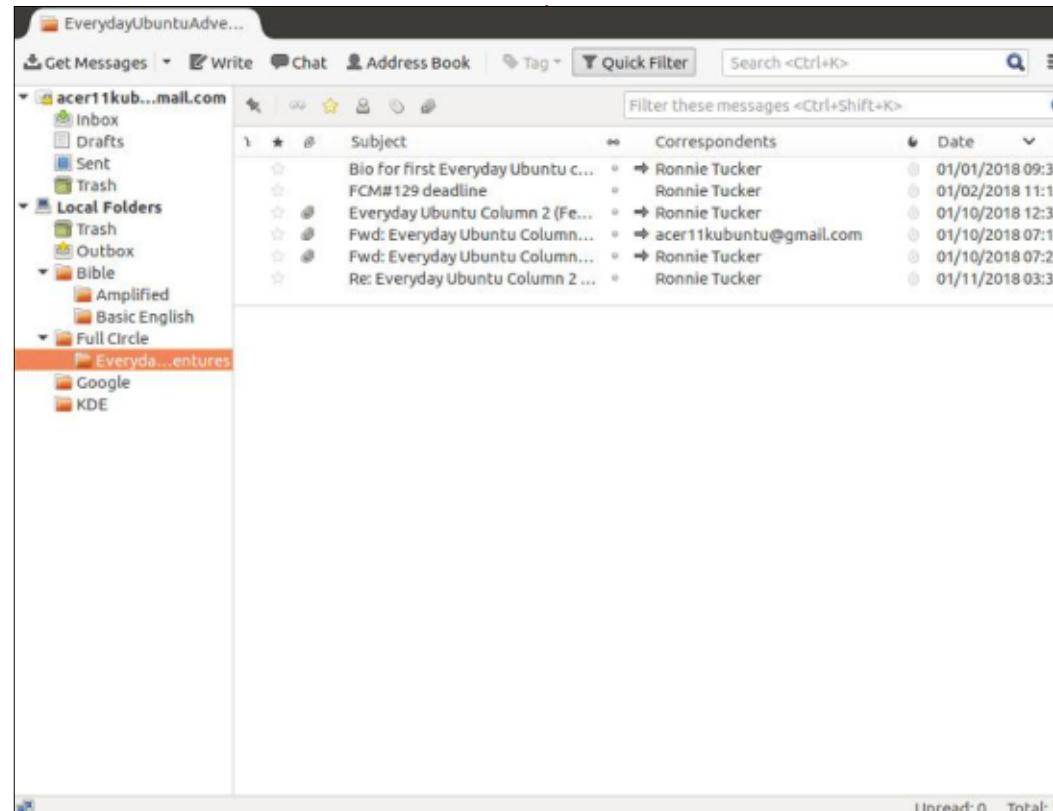


add-ins, including some interesting security capabilities like encryption and OTR (Off The Record). Skype is good to have for online phone calling. Here's the Pidgin client:



Email applications are pretty central to the online experience, and I usually use Kontact or Thunderbird. When I tried to use Kontact on the machine I use for this column, though, I ran into errors, and all my Google searches

indicated some pretty serious jumping through hoops would be required to get Kontact to work on this Unity desktop. I do have Kontact up and running on my other, less-used machine, an Acer Cloudbook with Kubuntu. Being an old hand with Microsoft Outlook (BOO, HISS, I know...), I do like Kontact's interface (similar to Outlook), and more advanced capabilities, although I have to admit I don't use those capabilities like I did when I was in the corporate world. As an email client,



Thunderbird is very capable. Thunderbird looks like this:

**Next time:** More software essentials and suggestions.

I invite feedback on easier/better ways to do things. Any such submissions in response to articles or content will be considered the property of Full Circle Magazine for publication purposes, without remuneration, unless the writer/commenter specifies otherwise. That said,

commentary and feedback are heartily encouraged and appreciated, at [acer11kubuntu@gmail.com](mailto:acer11kubuntu@gmail.com).



**Richard 'Flash' Adams** spent about 20 years in corporate IT. He lives in rural northwest Georgia, USA, with his adopted 'son', a cockatiel named Baby.



# LINUX LAB

Written by Charles McColm

My work normally entails running the daily operations of our Computer Recycling/Refurbishing Project, but I'm also part of our organization's IT Team, and as such sometimes (very rarely) get called on to solve issues in other parts of the organization. Our organization runs Windows on the desktop for most of the staff, but there are a few areas of the organization where the staff use Linux. Recently, I was asked to solve an issue at one of the locations we use Linux on the desktop. The way the issue was initially described to me sounded like a possible hardware issue - the system would start booting then hang at a black screen.

When I arrived on site, I confirmed that the system was just sitting on a black screen with a non-blinking cursor line in the top left of the screen. The normal behaviour for this machine was to boot to a LightDM login screen for Xubuntu Linux. I tried CTRL+ALT+F1 to switch to a virtual terminal, it didn't work.

I powered the system down and powered it up again to the same result. I repeated the process this time hitting the TAB key a few times and pressing CTRL+ALT+F1 for the first virtual terminal; this time I successfully brought up a terminal login.

Earlier in the week, I had one of our Computer Recycling clients bring in a laptop where the xserver configuration file had become corrupted. This problem had some similarities to the laptop issue, so I tried:

```
sudo dpkg-reconfigure  
xserver-xorg-video-intel
```

It was when I tried the dpkg-reconfigure command that I got an error about the system being out of space. (Note: if you're trying this on your system, you'll want to choose the xserver your graphics card is set for - for example: xserver-xorg-video-nvidia). Running df -h / showed the system actually had about 7GB of space left. The drive on this particular system was really small (40GB) but, with 7GB

# Recovering From A Black Screen

free, it shouldn't have been complaining that it was out of space.

Puzzled I decided to try installing gparted (to both check and resize the drive). When I tried installing gparted, I got a message saying that the system couldn't write to /var/cache. I tried to fix the issue with:

```
sudo apt-get -f install
```

It was at this moment that I noticed an inordinate amount of kernel images. This was the eureka moment, literally pages of kernel images had been left on the system. Removing old images was simple (or so I thought):

```
sudo apt-get autoremove
```

This would have worked except the system was out of space (on /usr) and broken. In order to free up a bit of space to run the apt-get -f install and apt-get autoremove, I manually removed a couple of the kernel images. I chose images that were neither the oldest nor the newest, and then ran:

```
sudo rm -rf /usr/src/linux-  
headers-4.0.3-20-generic
```

```
sudo rm -rf /usr/src/linux-  
headers-4.0.3-20
```

Note: the two lines above are an example (always be careful removing any part of the system that may be critical).

After manually removing a couple of sets of linux kernel headers, I was able to run:

```
sudo apt-get autoremove
```

Removing the old kernel images took nearly 1 hour. As a kernel image is removed, grub2 regenerates the grub2 boot file. Remove an image, regenerate the grub2 boot file, rinse and repeat – until all the extra kernel images were removed. This freed up 14.9GB of drive space on the tiny drive.

I'd previously tried to install gparted and it failed because of the full drive. Now that the drive had more space, I was able to run sudo apt-get -f install to complete

the installation. While we have unattended updates that run on this particular machine, those updates had stopped a few days earlier because of the full drive, so I also ran `sudo apt-get update && sudo apt-get upgrade` to upgrade the system to the latest packages.

On reboot, the machine loaded the LightDM login screen and the staff were able to login to the machine normally.



**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.charlesmccollm.com/>.



# MY STORY

Written by Jack Horsfield

The journey begins in approximately 2004. Windows denied all knowledge of my C: drive. Happily, all my data was on a separate partition and a re-installation of Windows fixed the immediate problem.

However, I was worried that I had no real backup strategy. I didn't really have a good destination for full backups, so I just copied important files to another computer that had limited free space.

My solution was to buy a really cheap computer from eBay and to use that as my backup medium. I bought a machine without an operating system but I thought I could put Linux on it, which might be fun. At that point, my Linux experience was limited to experimenting with Knoppix from a magazine CD.

I started with a Mandrake disk and went through the installation. A breeze! A quick reboot... and a blank screen. I had no idea what the problem was. But why did the

installer work but then give me a blank screen? I was not impressed. I didn't want to spend time fixing the problem, I just wanted a working computer.

I decided to install Knoppix. That worked perfectly, but then I discovered that Knoppix was pretty much impossible to update. It really was meant to be a CD distro.

So, yet another installation, this time Fedora Core. Very nice. I really liked Fedora Core. But after a year or so, I realised that I was using the backup computer more than my main computer. This made little sense. Obviously something had to change.

Happily, I came across Ubuntu on the front of Linux Format magazine. Possibly it was 5.04 (Hoary Hedgehog). It worked straight away.

## UBUNTU AND BEYOND

I stayed with Ubuntu for some years. It was always good, except

that I had to fix broken sound every time I upgraded. I tried lots of different desktops; I had about nine of them listed on my login screen. They did interfere with each other though.

One disappointing feature of Linux was that I found it difficult to program shortcut keys. I'm much more of a keyboard person than a mouse person, possibly because I used OpenVMS from Digital Equipment on a real terminal for many years.

In Windows, I was an avid user of AutoIt and then Autohotkey. Both of these programs made it really easy to define keys to control the desktop environment, move or resize windows, flip between applications, control Microsoft Outlook, process clipboard entries... the list was endless.

Linux seemed to have no equivalent way of defining keys and it was disappointing that I could be more productive in Windows than in Linux. Eventually,

# A Linux Journey

I found Autokey, which is a reasonable alternative, but is more cumbersome to use than Autohotkey.

For a long time, my preferred desktop was KDE 3.5. When they started work on KDE 4.0 I hated it, but persevered with the early versions for a year until it finally shipped. I still hated it and was angry that I had wasted a year on software that I was obviously not going to like and had just too many bugs in the beta releases. I didn't look at KDE again until a couple of months ago.

I moved to a Gnome 2 desktop until the Unity desktop came out. Unity absolutely was not for me and somehow I made the transition to Linux Mint.

## TILED WINDOWS

Not long after I moved to Mint, I decided to try a tiling window manager. I was rather dubious about the experiment — I really couldn't imagine that I would like having windows controlled by the

## MY STORY

computer. I installed xmonad and loved it. Well, mostly, but after the first flush of enthusiasm, I found xmonad to be difficult to customise. The configuration files required Haskell and I did not get on well with Haskell.

After a couple of years, I settled on the i3 tiling window manager and several years later I'm still using it.

Since I started with tiling window managers, I have not really cared too much about which distro I use, or the latest and greatest features. Because I don't have a desktop I don't bother with wallpaper or colours.

## THE STATUS QUO

My environment is configured so that it is biased towards keyboard use rather than mouse use. The main features are:

- Fish for the shell.
- Synapse as the main program launcher.
- Emacs as the editor.
- Pale Moon as my main browser, with the Pentadactyl addon so that I can control it from the keyboard.
- Chromium (with cVim) and

Firefox ESR (with Vimperator) as secondary browsers.

- Autokey for expansion of abbreviations and some control of applications.

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Although compilers are at the very heart of software development, and the speed and correctness of any application the reader encounters ultimately depends on the quality of the compiler used to produce it, most users give rather little thought to this matter. Perhaps some of the more knowledgeable will recognize the Gcc acronym, but that would probably be the extent of their familiarity with the concept.

Clang is a rather unusual C language compiler, in the sense that it is in fact only one component of the complete toolchain. The other, backend, portion is the LLVM project, that can be combined with other frontends to provide compilers for a large variety of other programming languages.

Clang has been used within Apple's Mac OS, Google's Android, and, more recently, as a main compilation system option for FreeBSD and OpenBSD. There has been a movement towards

providing access to this compiler within the GNU/Linux distribution ecosystem, though few have actually made the switch from the more common GNU C Compiler (gcc) to Clang. OpenMandriva made the headlines back in 2016 for this reason.

Since options are always a good thing, and Clang has been touted as being faster during compilation, I became interested in the possible advantages of Clang over Gcc. Under Linux Mint 18, based on Ubuntu 16.04, installation was quick and easy using command:

```
# aptitude install clang
```

Software packages weighing in at 27.4 MBytes were downloaded and installed, and I had access to the clang command. After reading the documentation, it would seem that most often-used compiler commands and parameters work in much the same way as with Gcc.

I then decided to write a couple of short test programs to compile with both suites, and test out. My

# A Note On Using Clang With Ubuntu

first test was a very classical table sorting routine, that compiled in 0.03 s with Gcc, and 0.05 s with Clang. Executable files were 9040 Bytes from Gcc, and 8376 Bytes with Clang. Execution times were 3.12 s with the Gcc-compiled version, and 0.004 s with the Clang-produced binary file. With my second test program, a matrix multiplication, compilation times were respectively 0.04 and 0.05 s, executable file sizes were 9056 and 8544 Bytes, and execution times were 6.62 and 6.19 s.

Though the test set is rather small and is very much geared toward computationally intensive applications using no libraries other than standard C routines, it is clear that both compilation suites perform well, and are quite comparable to each other. Contrary to one of the advantages set forward, compilation times with Clang were in fact a tad longer than with Gcc, though executable file sizes and execution times were best with Clang.

However, most real-life

applications do actually need to use external libraries present on the system. To see how Clang compared in comparison with Gcc in this use-case, I tried out a short demo program using the GTK version 3 library. Compilation is a tad more complex, since these development libraries first need to be installed:

```
# aptitude install libgtk-3-dev
```

Then, one needs to invoke each compiler while adding both a path for header files (actually located in directory /usr/include/gtk-3.0) and dynamically-linked library files. As per instructions for Gtk 3.0, I ended up using the following command for Gcc:

```
gcc `pkg-config --cflags  
gtk+-3.0` test_gtk.c -o  
test_gtk `pkg-config --libs  
gtk+-3.0`
```

As mentioned, compiler parameters are similar and this was easily adapted for Clang:

```
clang `pkg-config --cflags  
gtk+-3.0` test_gtk.c -o  
test_gtk `pkg-config --libs  
gtk+-3.0`
```

Compilation times were 0.29 s for Gcc, and 0.54 s for Clang. This time, however, executable files weighed in at 14808 Bytes for the Gcc-compiled version, and 15440 Bytes for Clang.

At the time of writing (early 2018), Clang still seems to perform less well during compilation on a Gcc-dominated system. As for executable file sizes and execution times - where applicable in background tasks - it is probably fair to say that there are no major differences in file sizes, while pure C programs with no library invocations benefit considerably from the use of Clang as regard execution times.

So this is a bit of a mixed result, and not yet in line with what the Clang project are aiming for (see <https://clang.llvm.org/>). However, it must be noted that these tests were performed using the standard Ubuntu-provided kernel and libraries, all compiled with Gcc. If there comes a time when the kernel and system libraries and all

compiled using Clang in the Ubuntu distribution, then it may very well be that compilation times are reduced under Clang, thus giving it a more clear advantage over Gcc. There has been progress compiling the Linux kernel with Clang, specifically for use in Android systems. There also has been some interest in producing a version of Debian using Clang. So the scenario in which Clang would replace Gcc is very much a possibility, perhaps in the medium term.

For the time being, the fact that this compiler suite is available within Ubuntu, but also under Mac OS, several BSD distributions, Android, and - albeit very recently - Windows, may already make Clang a useful alternative if developing cross-platform applications using pure C, C++ or Objective C. Other arguments have been made concerning the Clang compiler's more open structure, which would make it easier to modify and adapt to other programming languages. This argument, though not directly applicable to end users, may weigh on making the Clang/LLVM a preferred compiler base when newer programming languages appear moving forward.

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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 Catalonia (UOC).

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



AUDIO MP3



## 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:  
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## TRANSLATIONS

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# Write For Full Circle Magazine

## 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.



# REVIEW

Written by Philip Jones

My Linux journey started with the eeePC, but has included Ubuntu, Linux Mint, Linux Mint KDE edition, Kubuntu, MX 14-16, Puppy Slacko, Bodhi, Lubuntu, Elementary, Peppermint 6, Linux Lite 2.8, Ubuntu MATE, Knoppix, Linux Lite 3.2, Linux Lite 3.4, Linux Lite 3.6.

In fact, I have installed Linux Lite on 9 different computers, to date – I have found it to be a very rewarding distribution to use, so I've written this piece to say why. Technically, you could call it a review, but that implies some critical comment, which you'll struggle to find from me.

Linux Lite is based on the latest LTS of Ubuntu – so 16.04 is the basis of series 3.0 of Linux Lite, with version 3.8 available for download. Incremental improvements are achieved throughout the series but a new installation is required for the start of a new series. Ubuntu 18.04 will kick off Linux Lite series 4.0.

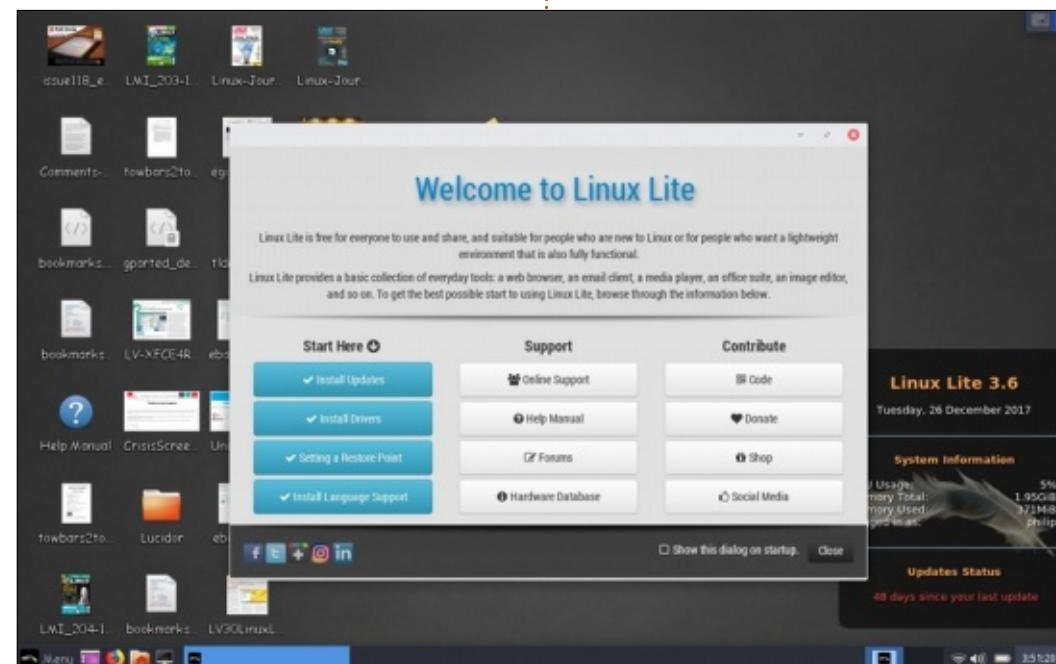
So, in a world of so many

Ubuntu derivatives, just what is it that makes Linux Lite stand out for me?

**Personal** – I don't get a great kick out of impressive graphics, particularly if they hit my machine's performance or usability. I like stuff to work. I don't mind working away to resolve a problem, but I like a reliable core as this makes it clearer where a problem may lie. And I'm no expert, despite having had close encounters with

computers for nearly 40 years, so I like an OS that tells me what it's doing and, with a bit of effort on my part, how.

**Hardware** – I don't throw away older PCs, I rehabilitate them for charitable uses or fund-raising. So I need an OS that can run on less memory and slower processors. But I also have a Tower desktop, and an Acer laptop, each with 8GB RAM, and I prefer to run them with Linux Lite too, so it's not just about being mean with memory usage.



# Linux Lite

**Ease of use** – I want an OS to be easy to configure for different needs and preferences. The desktop must be capable of changes to layout and appearance to suit different preferences, hardware and different skill levels. Equally important are the settings for ancillaries such as screen, touchpad, printer, etc, little changes which enable us to match our tools to our computer usage in a way that we find efficient and congenial.

**Easy to maintain** – not just system updates, supplied reliably and capable of fuss-free implementation, but routine tasks such as backup and storage management which can easily absorb too much productive time if they can't be set up and run easily and consistently.

So coping with this range of varying requirements, I find is the great strength of Linux Lite. It has a modest, not to say rather lack-lustre name perhaps, but one that also says a lot about its philosophy



– ‘Lite’ as in suitable for older machines with lower specs, but also ‘Lite’ as ‘not intensive’, not requiring a big learning effort to deploy effectively.

I first installed it when rescuing a Windows 7 laptop for a friend. This was 2.8, and I liked the look of it, so, when the advent of Ubuntu 16.04 prompted a review of my installations, I put version 3.0 (based on 16.04) on to one of my own machines. Linux Lite is now at 3.6 and I have it on a PC tower and 3 laptops of mine and have installed it on 5 older laptops for other people. Its Ubuntu base means it installs easily, gives it access to a large range of software, and it is very actively maintained, particularly for dealing with security issues. But it has that in common with most Ubuntu-based distributions.

## USABILITY

Linux Lite uses the XFCE desktop, now at version 4.12, described in the late lamented Linux Voice Magazine (Linux Voice Issue 25) in this way: “*It’s a great-looking, powerful desktop that doesn’t steal too many*

*cycles from your CPU, nor memory from your RAM, while still managing to look sleek and modern. XFCE is stable and comprehensive, including everything you need, from session management and an application finder, to its low-resource yet super-powerful Thunar file manager. ... It’s also stable and mature, with few changes being made from one release to another. .... It does what it’s designed to do with very little fuss.”*

I don’t think I can add to that except to say Linux Lite is almost a perfect match for it and makes the

most of its flexible, “little fuss” approach to the desktop environment and functionality. At the core of Linux Lite’s success as an operating system is its twin focus on efficiency and usability, and it works well with XFCE to achieve that – a bit more on this later.

modified so that essential post-installation tasks are highlighted and can be run directly from the Welcome page, linking to the Help Manual as you go.

## A WELCOME PAGE WITH ACTIONS

From the Welcome Page the new user can

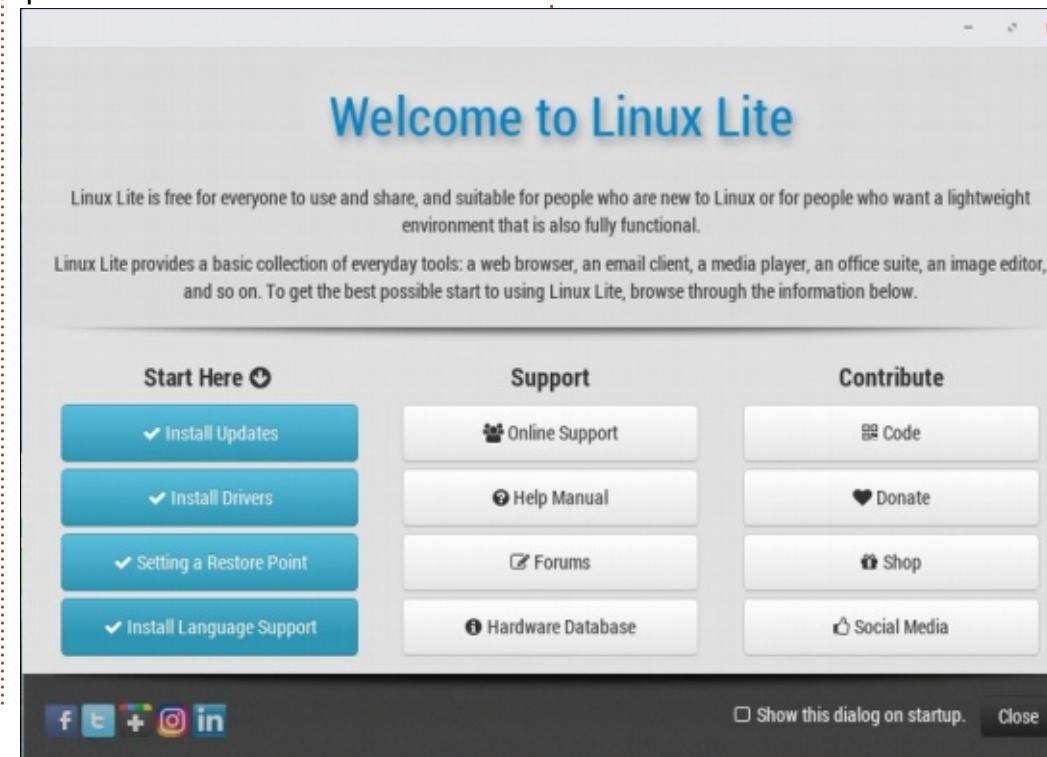
- update the system,
- install any special drivers needed,
- implement full language support throughout the system and applications software, and create a first Restore point using SystemBack.

Note too the links for Support, including the Help manual and Hardware Database.

## HELP AND SUPPORT

In fact, the next striking aspect of Linux Lite is its Help Manual. Available online but also installed by default on the desktop, it loads up easily in a browser and presents a very accessible set of documents very clearly.

I don’t know another help system in common use that



presents its topics as clearly as this, particularly for someone new to the system. Each Contents page topic opens immediately to a subtitle menu helping you to easily identify the right information track for you. Each of the notes themselves is written clearly and simply, and the Help Manual could in fact be useful to almost any inexperienced user of a Debian or Ubuntu based system.

In addition, underpinning every user is an excellent Support Forum (linked to from the Welcome screen, and elsewhere) which gets constant attention from developers, including the ‘main man’, Jerry Bezencon. I have found problems get dealt with constructively and promptly, so it’s rare to have an unresolvable problem without at least a suggestion for a workaround. And solutions often find their way seamlessly into upcoming upgrades.

## LITE TWEAKS AND OTHER LITE ADDITIONS

When you get past initial setup, you find there are a host of extra utilities, some substantial, some

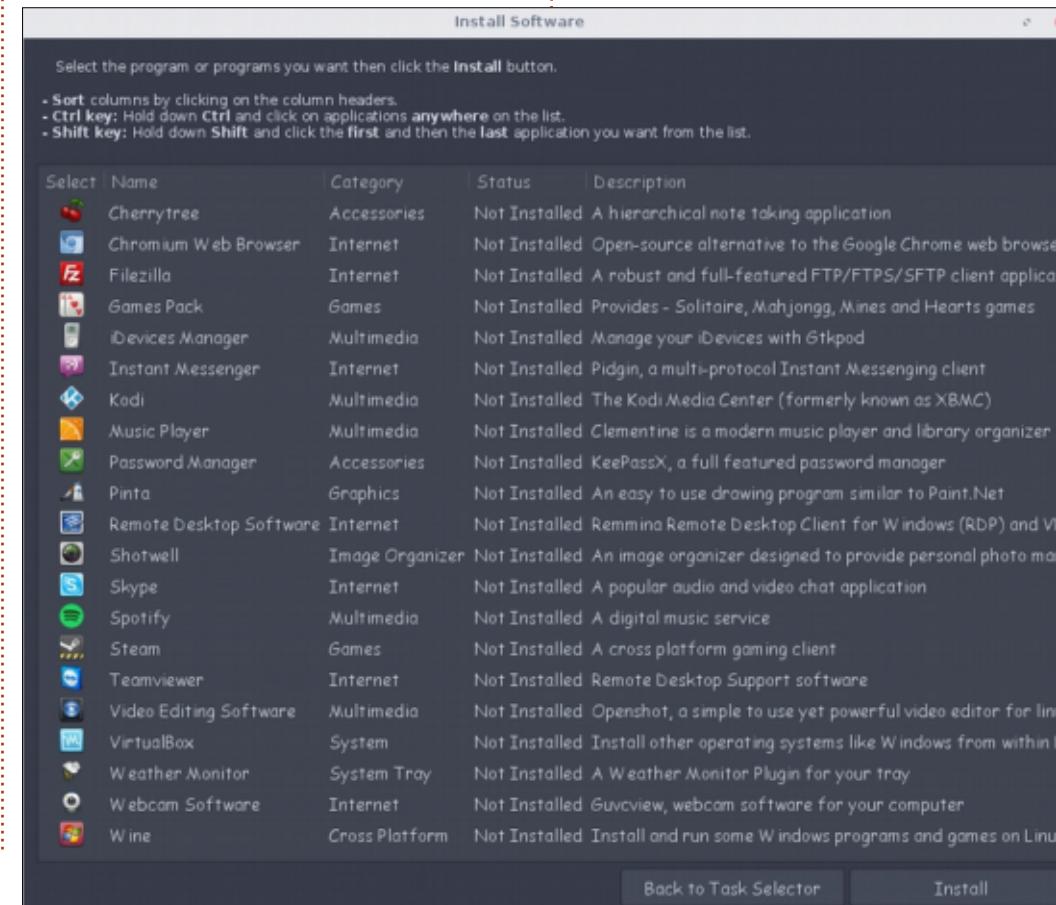
quite small, but all invaluable, that help with basic housekeeping of the system. Most of these are purpose-written for Linux Lite, identified in the menus as “Lite” programs.

The one I find myself turning to most often is Lite Tweaks. It presents a wide range of configuration, repair, management and installation issues, some particularly suitable for older

machines (eg Clear Memory), some helping with quite advanced issues (e.g. Installation of specific kernels). Lite Tweaks is a very practical and pragmatic way of helping ordinary users manage a wide range of common but potentially tricky problems with confidence.

Other Lite programs include:

- Lite Software – a selection of packages for simple installation –



see screenshot below.

- Lite Sources – a way of selecting the most convenient repositories for your Lite Software.
- Lite Updates Notify – an easy way to set how frequently you will be reminded of the need for updates.
- Lite Upgrade – an upgrade utility for moving to the next point upgrade within a major series, e.g. 3.4 - 3.6.
- Lite User Manager – user account management.
- Lite Widget – a neat Conky-based system display for the desktop.

## HIBERNATION – RELIABLE AT LAST

There are many details about this installation that make using and maintaining it much more agreeable than any other I have used - FOSS or proprietary - but it could be tedious to list them all. Instead I will highlight just one of its many virtues, namely, the ability to hibernate in a swift and reliable fashion.

Hibernation has always seemed a brilliant idea - just close down as you are and later resume with everything as it was. This was always over-promised until now,

slow to close, even slower to reload, and often failing to reload properly. In fact, I gave up long ago trying to use it in Windows, and several Ubuntu-based distros still disable it by default.

Linux Lite enables it out-of-the-box (but see Lite Tweaks for the option to disable it). When selected, it closes down quite quickly - though my usual 30+ Firefox tabs do often prove a bit slow to digest - and it resumes only a little more slowly than a standard (typically speedy) boot. The process has improved throughout series 3 of the OS, and works brilliantly on my 11 yr old Core2Duo laptop (refurbished with 2GB memory and an SSD).

## OTHER FEATURES TO ATTRACT A NEW USER?

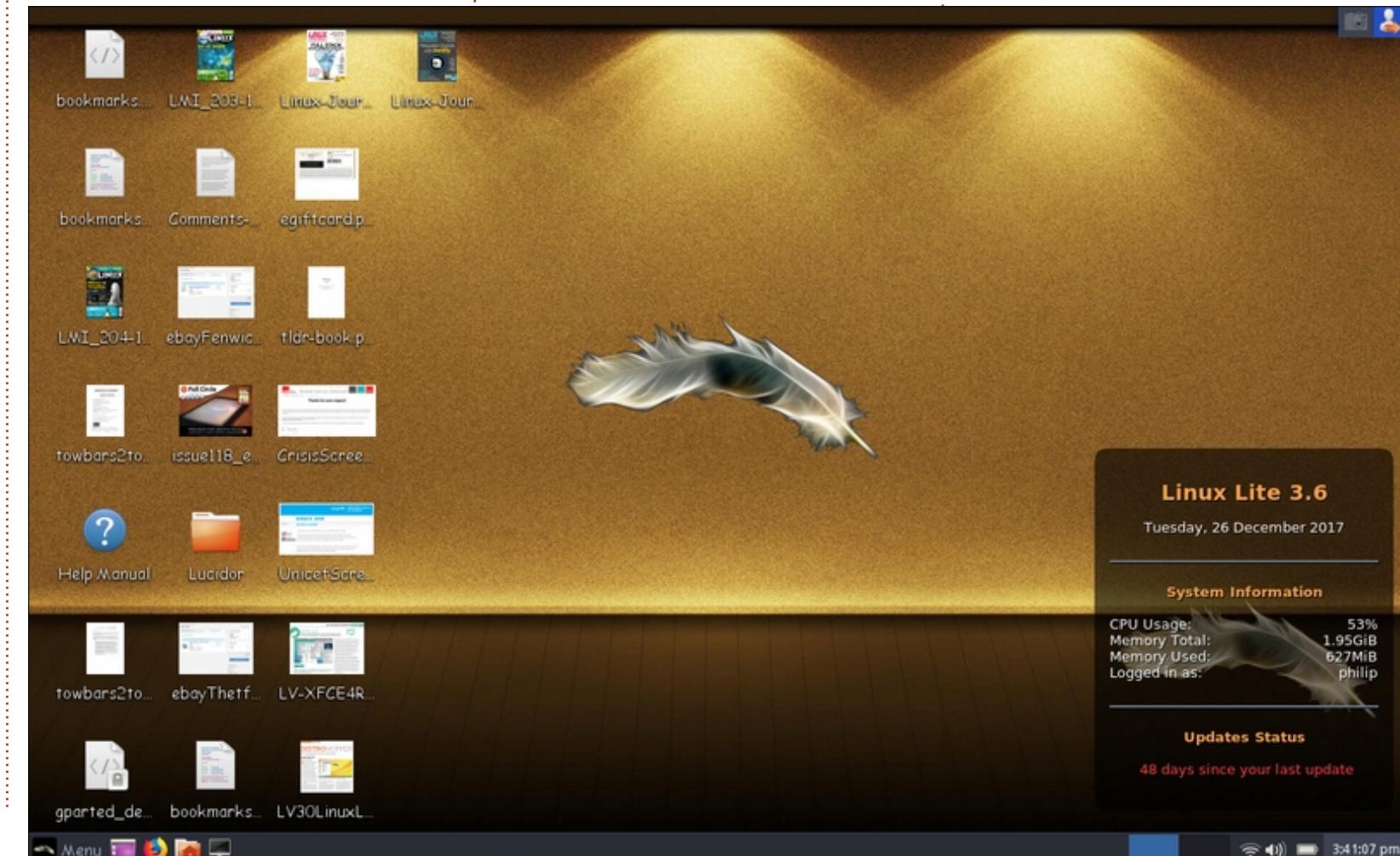
A good range of software, of course, all accessible through a clearly laid out, configurable menu system – Synaptic is available as well as Lite Software, and new installations are always to be found in a sensible place in the XFCE Whisker menu, which can be additionally configured via a Settings menu program.

Linux Lite provides a simple default desktop that will be familiar in style to practically all users – menu button bottom left, in a panel with selected program launchers, a status bar for opened programs, a virtual desktop switcher, and an indicator bar. But XFCE 4.12 offers a number of flexible ways of configuring the

desktop look and functionality to suit individual user wishes and sense of aesthetics.

I have a 2006 Core2Duo laptop which suits this layout, but I also have an Acer Aspire V3-571 in typical widescreen format where I've found it helpful to set the panel vertically.

Here I've embellished – perhaps over-embellished - the standard panel by using it in a vertical dual-row deskbar mode, inserting grouped launchers for many programs, and incorporating a window status panel, as well as notifications and indicator panels. It may be a bit fussy, but that's my fault – not the system's. It does



demonstrate, however, how easy it is to change from the standard appearance if you want to.

This to me epitomises the way attention has been paid to getting everything to work together consistently and reliably, and to the emphasis placed on usability for the ordinary user in the choices made in putting the distribution together and developing it.

## AN OS FOR ALL SEASONS

Although the name Linux Lite might make you assume it is geared primarily to low memory machines, in fact its consistency and flexibility make it suitable for many types of hardware, and user, and 2 of my machines now run it with 8GB RAM. I find too that the clarity of the Help Manual and the constructiveness of the Forum have enabled me to develop my knowledge and skill levels in Linux to a greater degree than with other Linux distros, which is highly satisfying.

For me, the fact that it has low basic hardware requirements is an advantage, as the main reason for installing is its great usability. For

anyone who finds their OS tends to get in the way of productive computing, Linux Lite is definitely worth a look.

## REFERENCES

Linux Lite Home page

[www.linuxliteos.com](http://www.linuxliteos.com)

Linux Lite Support

[www.linuxliteos.com/support.html](http://www.linuxliteos.com/support.html)

Hardware Database

[linuxliteos.com/hardware.php](http://linuxliteos.com/hardware.php)

Help Manual

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Linux Voice Desktop Review, Issue

26 May 2016, available under

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Voice is now part of Linux / Linux

Pro Magazine, see [www.linux-magazine.com/Issues](http://www.linux-magazine.com/Issues)



Philip first got entangled with computing nearly 40 years ago, minding a 'mini computer' at work (about 50% bigger than a 4 drawer filing cabinet!), and cursing a ZX81 at home.





# LETTERS

## MAILING LIST

I've been getting Full Circle for a few years, but the last issue for which you sent me a notification was Issue 128. I went to the FCM website and downloaded issues 129 and 130.

Are you no longer sending out email notices when an issue is available?

**Lou**

Ronnie says: Yes, we have a mailing list that gets an email sent out as soon as an issue, or news podcast, is released. The signup for the mailing list is on the right-hand side of the site ([fullcirclemagazine.org](http://fullcirclemagazine.org)). Fill in your email address, click subscribe, and you'll get an email for the release of the next issue.

You may have been on the first mailing list that I had to delete as it was full of junk email addresses. Then there was the accident I had with the second mailing list...

If you would like to submit a letter for publication, compliment or complaint, please email it to: [letters@fullcirclemagazine.org](mailto:letters@fullcirclemagazine.org). PLEASE NOTE: some letters may be edited for space.

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## FULL CIRCLE NEEDS YOU!



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

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

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



# Q&A

Compiled by Gord Campbell

**Q** Just dual booted Ubuntu yesterday alongside my Windows 10. In Windows all my keys on the keyboard are working fine but, when I switch to Ubuntu, whenever I press @ it comes across as ".

How do I correct it?

**A** (Thanks to **steeldriver** in the Ubuntu Forums) It sounds like you choose the wrong keyboard layout (e.g. US versus UK) during installation.

You should be able to select the right layout via Settings --> Keyboard --> Text Entry

**Q** I'm using a lot of text boxes in a long document in Writer, latest version. Basically, I want them to look like post-it notes. How do I set the text box defaults to have a certain font, background color, etc, so I have to do that only once instead of repeating the formatting every time?

**A** (Thanks to **RGB-es** at ask.libreoffice.org) With text boxes, it's not possible, but you can use frames instead: Insert > Frame > Frame will give you a sort of "floating small page within a page". There are frame styles where you can define colour background, line border, etc, and inside those frames you can use everything Writer has to offer, like paragraph styles.

**Q** Is there a list of codes that one can type when writing a document, like MS Word has (Alt+...), that allows one to highlight, insert shapes, etc?

**A** (Thanks to **librebel** at ask.libreoffice.org) For a complete list of Keyboard Shortcut codes for LibreOffice Writer (version 5.4), please see: Shortcut Keys for LibreOffice Writer

**Q** Just installed the latest Kodi libreelec build and have been really impressed until I tried playing some DVDs, all original.

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

When I pop the DVD in the drive, it runs OK, I can hear the music but the DVD navigation menu and the video remain blank. I'm running on an Intel Core2 Duo with 4 GB RAM and have an Intel HTPC motherboard with onboard Intel HDMI chipset.

**A** (Thanks to **craiguk** in the Kodi forums) The fix for me was to set the MPEG2 hardware decoding option to OFF in the video playback settings. Obviously an issue with my Intel HDMI chipset and the Linux driver support.

**Q** I am currently making a Scribus document that I first set to "landscape." After doing a few things, I realized I needed to make it "portrait." However, it's not changing.

**A** (Thanks to **utnik** in forums.scribus.net) Document setup is the right place to change those settings. but you need to tell Scribus what parts of the document should be affected. (Check the boxes to 'apply changes

to all pages' and/or '...to all master pages'...).

**Q** Right now, I use ARGUS TV to schedule TV recording from my USB TV Card that has a CA-Modul. Now I'm curious if there is any good software for Ubuntu that can do the same thing for me.

**A** Have a look at Mythbuntu.

**Q** Is there any other program like cryptkeeper for Ubuntu that actually works?

**A** Search for SiriKali. I'm not sure if it is available for all variants of Ubuntu, but it works for me under Xubuntu 17.04 and 17.10.

**Q** When I update pulseaudio using the terminal, I get version 8 but I notice there is a version 11.1 that has been issued.



**A** There are often occasions when the Ubuntu team has not confirmed that a new version of an application is secure and works.

There's just one gotcha: I have to avoid solutions that are specific to Windows or MacOS.

What do you think?

## TIPS AND TECHNIQUES

### Topic Expansion

I was considering killing the Q&A column, or passing it on. One big factor is the slowdown of activity in the Ubuntu Forums. When I started, it usually took 16 hours to fill 10 pages of new messages in the Forums. Now, 24 hours often fills just four pages. I might log on and write half a dozen messages, but none of it is new, just answering questions which have been asked before.

After discussion with the Full Circle team, another option came up, to expand the coverage to popular applications which run under Linux. At this point, I'm thinking of LibreOffice, Kodi, Gimp, Scribus and Apache. Each of them has a forum, where I might find interesting questions and their answers.



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





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The current site was created thanks to **Lucas Westermann** (Mr. Command & Conquer) who took on the task of completely rebuilding the site, and scripts, from scratch, in his own time.

The Patreon page is to help pay the domain and hosting fees. The yearly target was quickly reached thanks to those listed on this page. The money also helps with the new mailing list that I set up.

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

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



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**Desktop** screens should be emailed to: [misc@fullcirclemagazine.org](mailto:misc@fullcirclemagazine.org)

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