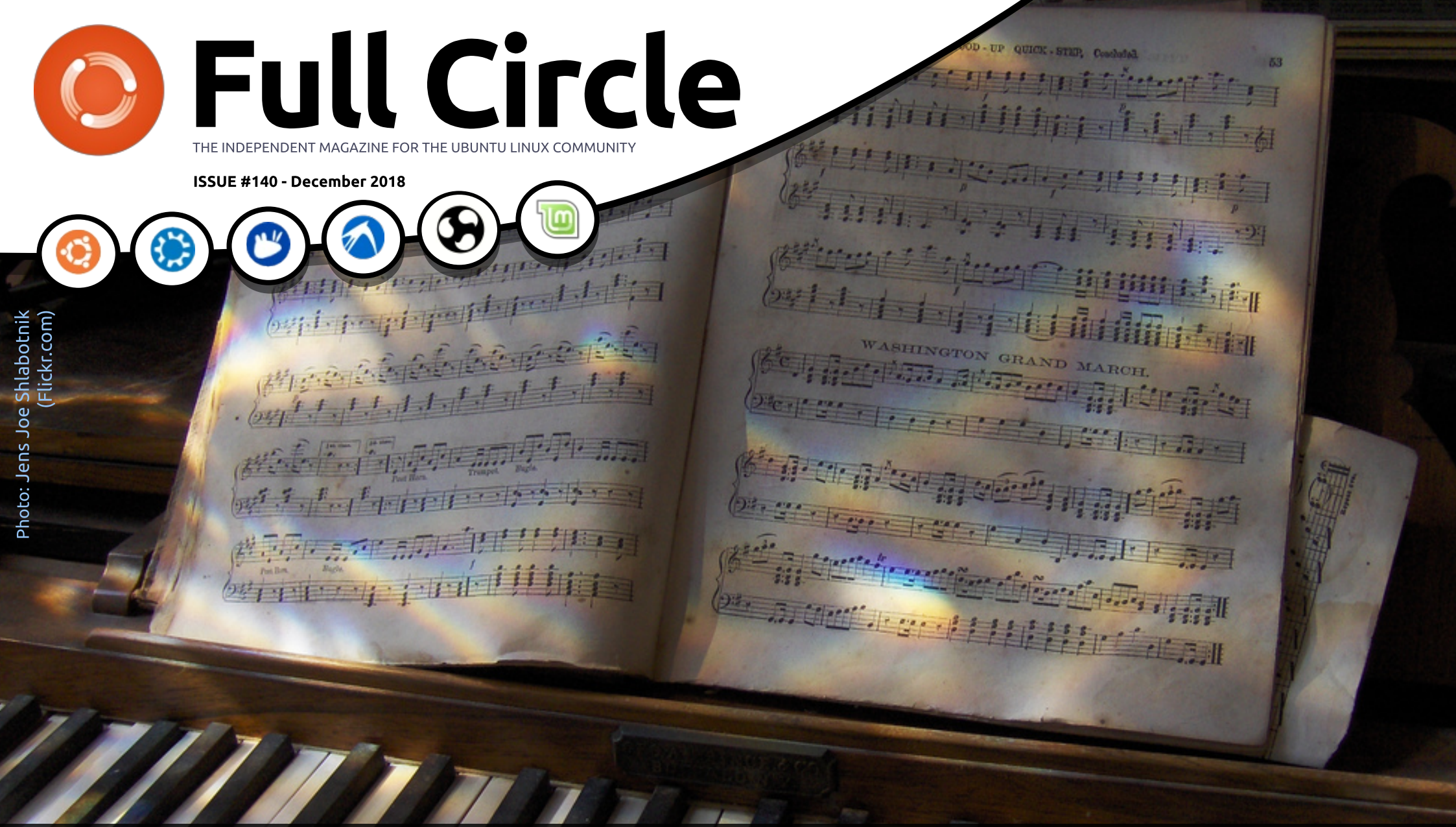
Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #140 - December 2018



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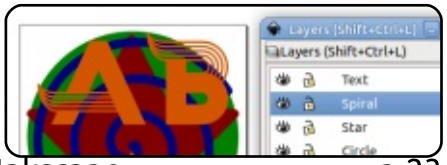
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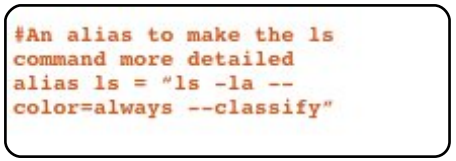
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EDITORIAL

Welcome to the last issue of Full Circle*.

It is with much sadness that I bring you the last issue of FCM*. We go out with the regular Python, Freeplane, and Inkscape. We fill the gaps with an interesting look at the LXD Hypervisor and how to send email from the terminal using sendemail.

I finally compiled the 2018 survey results into an article that you can read this month. Not many people filled it in. Just over 700 and that was over about six months. I was hoping for more. Oh well, it still gives us a look into the minds of those readers.

ErikTheUnready has been beavering away churning out articles. Not only has he contributed the comics this issue (and I have dozens upon dozens in reserve), but he also wrote the Hypervisor article, the GDPR article, Q&A, a software review and a game review. He's basically written half the magazine this month. He's putting you non-contributors to shame! Send your articles to ronnie@fullcirclemagazine.org.

I know now, from the survey results, that not many of you bought Ubuntu Touch devices, but for those of you who did (and for those who flashed UBports Touch) we have OTA-6 landing this month. Some browser tweaks and some other under the hood stuff has been done. I just wish I could get my wireless display adapter to work with Touch. Maybe some day.

All the best, and keep in touch!
Ronnie
ronnie@fullcirclemagazine.org

* of course, that's the last issue for 2018. See you next month! :)

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Rest in peace, Fedora Linux 27

Fedora may be the best overall desktop Linux operating system, but it trails Ubuntu in one major area -- support. You see, Canonical's distribution has "Long Term Support" versions, some of which now have an insane 10 years of support. Fedora, by comparison, only offers support for one month following two subsequent major releases. This can vary based on delays, but it will probably average a bit more than a year.

For instance, Fedora 27 was released November 14, 2017, and Fedora 29 was released on October 30, 2018. This means as of today, November 30, Fedora 27 has reached end of life mere weeks after its one-year anniversary.

If you are running version 27 of Fedora, don't worry -- your computer won't stop functioning. However, without bug fixes and security patches, it would be foolish not to upgrade to the latest and greatest. While you technically can upgrade to the still-supported Fedora 28, you might as well go the full distance and install version 29 instead. It's the best Fedora yet, and you will be glad you did.

Source: https://betanews.com/2018/11/30/fedora-linux-27-eol/

BlackArch Linux Updated Is Over 10GB, but Full of New Tools

The growingly popular Arch-Linux based BlackArch Linux has just been updated to version 2018.12.01 (yes, they are numbering releases based on the date), and it brings a whole slew of new tools – 150, to be exact. Users will find that this brings BlackArch Linux's total amount of tools to around 2000.

BlackArch Linux is a pen-testing focused OS, much similar to Kali Nethunter. That is why it's called BlackArch (for BlackHats, right?).

In this latest release, the Linux kernel has been upgraded to kernel version 4.19.4, as well as updates to all of the window manager menus and system packages.

Furthermore, a 'bactl' package was added, which is a script that allows the user to configure their BlackArch environment. The wicd service has been enabled by default, while dwm and wmii window managers were removed.

You can view the full changelog for this BlackArch Linux update over on the distro's blog, as well as see the entire list of tools (its super long) included in the OS on the tools page.

At over 10GB in size, the OS is still small enough to be placed on a USB media or VirtualBox. However, the OS also offers a smaller "netinst" image, for network installations.

Source: https://appuals.com/blackarch-linux-updated-is-over-10gb-but-full-of-new-tools/

Void Linux: Built From Scratch for Full Independence

Void Linux is a bit out of the ordinary. It offers an unusually interesting alternative to many of the traditional Linux distros affiliated with a larger Linux family such as Debian or Ubuntu or Arch.

Void Linux is an independently developed, rolling-release, general-purpose operating system. That means that its software is either homegrown or plain-vanilla compiled.

Some of Void Linux's under-the-hood specifics include its own package management system, dubbed "XBPS," for X-binary Package System, an initialization system called "runit," and integration of LibreSSL instead of

OpenSSL for Transport Layer Security (TLS) protocol.

In fact, Void Linux was among the first distributions to switch to LibreSSL by default, replacing OpenSSL when developers forked from OpenSSL in 2014. Their goal was to modernize the code base, improve security, and apply best practice development processes.

The latest release, version 20181111, comes with an interesting selection of desktop environments: Base system, Enlightenment, Cinnamon, MATE, Xfce, LXDE and LXQt.

However, Void Linux is not a computing platform for everyone. It is not a typical distro. It works out-of-the-box with barebones basic system tools and a few software packages, such as Web browser, file manager and text editor.

Anything else you must add from a limited Void Linux repository. More software is available from binary packages that you must compile before use.

Source: https://www.linuxinsider.com/story/Void-Linux-Built-From-Scratch-for-Full-Independence-85703.html

Nutty: GUI Network Monitoring And Information Tool For Ubuntu, Linux Mint And elementary OS

Nutty is a graphical network information and monitoring tool. The application can display network card information, network and data usage, test upload and download speed, provide information on active ports, and more.

While Nutty is made for elementary OS, it also works on Ubuntu or Linux Mint (packages also exist for openSUSE and Arch Linux). The information it displays comes from various tools / packages like net-tools, nmap, traceroute, vnstat, nethogs, wireless-tools, iproute2, and pciutils.

The application has some hard-coded commands for Ubuntu-based Linux distributions and as a result, some of its features may not work on other Linux distributions. However, there's work to externalize all commands from the code in order to make it easier to work with other Linux distributions.

Source: https://www.linuxuprising.com/2018/12/nutty-gui-network-monitoring-and.html

Linus floats Linux kernel that 'fixes' Intel CPUs' Spectre slowdown

Linus Torvalds has stuck to his "no swearing" resolution with his regular Sunday night Linux kernel release candidate announcement.

Probably the most important aspect of the weekend's release candidate is that it, in a way, improves the performance of STIBP, which is a mitigation that stops malware exploiting a Spectre security vulnerability variant in Intel processors.

In November, it emerged that STIBP (Single Thread Indirect Branch Predictors), which counters Spectre Variant 2 attacks, caused nightmare slowdowns in some cases. The mitigation didn't play well with simultaneous multi-threading (SMT) aka Intel's Hyper Threading, and software would take up to a 50 per cent performance hit when the security measure was enabled.

Linux 4.20-rc5, emitted on Sunday, addresses this performance issue by making the security defense optional: processes can decide to use it via a system call, and all SECCOMP processes get it. Thus, if an application needs the side-channel mitigation and doesn't suffer a slowdown hit, it can enable STIBP.

In other words, apps can decide to take their chances and not apply the STIBP defenses for Spectre. There is, to our knowledge, no known malware in the wild actively leveraging the Spectre CPU holes to potentially steal secrets and other information from running processes.

Source: https://www.theregister.co.uk/2018/12/04/linux_kernel_spectre_mitigation/

DragonFly BSD 5.4 released

Just under eight months after 5.2, version 5.4 has now been released by DragonFly BSD. In version 5.4 of the free, originally from FreeBSD 4 derived operating system numerous improvements and extensions were made. One of them is the improved support for asymmetric NUMA systems. This concerns systems where the processors can not access all of the memory directly, which is apparently implemented in the AMD Threadripper 2990WX. In DragonFly BSD 5.4, the scheduler has been adapted to preferentially place processes on CPUs that have direct access to memory, and memory management normalizes the memory queues for CPU nodes without directly attached memory.

The speed of the kernel has been optimized by trying to reduce lock conflicts and make better use of the cache. The Hammer2 file system has been debugged and is recommended as the root file system, except in cluster mode, which is not yet supported.

DragonFly BSD now also has virtio drivers to run in virtual machines with significantly better performance.

Source: https://www.pro-linux.de/news/1/26565/dragonfly-bsd-54-freigegeben.html

AI-Based Algorithm Developed by Researchers Could Make Text Captchas Obsolete

British and Chinese researchers from UK's Lancaster University and China's Northwest University and Peking University have developed a new artificial intelligence-based attack against text captchas which could make them obsolete.

According to the research team behind the "Yet Another Text Captcha Solver: A Generative Adversarial Network Based Approach" paper, their new captcha solver does not need high volumes of real captchas as a training ground since it is not based on a machine-learning approach.

Moreover, the use of artificial intelligence makes the new captcha solver a lot less time consuming and labor intensive which makes it a viable solution even for consumer-grade computing systems.

The solver algorithm uses a Generative Adversarial Network (GAN) technique which generates vast numbers of training captchas almost identical to the authentic ones with the help of a generator program.

In turn, the generated captchas will be used to train the solver algorithm, later tested and refined against real captchas from popular websites such as Microsoft, Wikipedia, eBay, and Google to obtain notably higher accuracy when compared to other captcha attack systems.

Source: https://news.softpedia.com/news/ai-algorithm-developed-by-researchers-could-make-text-captchas-obsolete-524130.shtml

Mageia 7 Beta 1 Linux distribution now available for download

It's been almost a year and a half since the last major release of Mageia -- version 6. With that said, Mageia 6.1 was released in October of this year, however. This can feel like an eternity for Linux users, when some distributions see major updates once or twice a year. Of course, this isn't necessarily a bad thing, dear Mageia users. After all, as the saying goes, "if it ain't broke, don't fix it." Mageia 6.1 is great.

If you are chomping at the bit for a new major Mageia release, I have good news for you -- the first beta of Mageia 7 is finally here.

"There is still a lot of work to come before Mageia 7 is ready, a big Qt and Plasma update, fixes for MATE and more checks on 32-bit hardware as well as the artwork for Mageia 7. We are all looking forward to implementing these changes and getting all of the rough edges polished out with all of the help from the community. This release will see the return of the Classical Installer as well as the

Live Images, with the standard lineup of architectures and Desktop Environments -- 32 and 64-bit Classical Installers; 64-bit Plasma, GNOME and Xfce Live DVD's and a 32 bit Xfce Live DVD," says Donald Stewart, Mageia.

Source: https://betanews.com/2018/12/08/mageia-7-beta-linux-download/

Free Software Foundation Received 1 Million USD from Handshake

The Free Software Foundation just received a series of earmarked charitable donations from Handshake. The donations amount to a total of $1 million USD. The FSF has already received a $1 million Bitcoin donation from the Pineapple Fund earlier this year. With all this funding, the FSF will be in a good position to develop necessary upgrades for the GNU Project, among other things.

The Free Software Foundation is of course a 501(c)(3) non-profit organization, founded by Richard Stallman of GNU Project fame. Richard Stallman founded the FSF in 1985, in order to support free software development. He had already founded the Free / Open Source Software Movement in 1983. Therefore, the FSF is basically the official funding source of the FOSSM.

The executive director of the Free Software Foundation, John Sullivan, had the following to say after FSF received the donations from Handshake:

"Building on the $1 million Bitcoin gift from the Pineapple Fund earlier this year, and our record high number of individual associate members, it is clear that software freedom is more important than ever to the world. We are now at a pivotal moment in our history, on the cusp of making free software the 'kitchen table issue' it must be. Thanks to Handshake and our members, the Free Software Foundation looks forward to scaling to the next level of free software activism, development, and community."

Source: https://appuals.com/free-software-foundation-received-1-million-usd-from-handshake/

Canonical Makes Kubernetes Moves

When last I spoke to Mark Shuttleworth, Canonical's founder, in Berlin, he told me that "enterprise Kubernetes runs on Ubuntu." Kubernetes, the most popular cloud container orchestration program, "makes life easier for people who want portability across public clouds. With multiple Kubernetes clusters you have one common way to run workloads on Linux over both private and public clouds."

Of course, these days, it's hard to find an enterprise technology company that isn't pushing its Kubernetes credentials. Besides IBM/Red Hat, the acquisition made because of Kubernetes, Cisco, HPE, Microsoft, and Oracle, to name a few, are all adding Kubernetes to their software portfolios. Canonical, however, has been deploying Kubernetes almost since Google first rolled Kubernetes out the door in 2014.

For enterprise users, Canonical announced commercial support, Ubuntu Advantage, for Kubernetes clusters deployed using kubeadm. Kubeadm can be used to deploy production Kubernetes with DevOps provisioning systems such as Ansible or Terraform.

Source: https://www.zdnet.com/article/canonical-makes-kubernetes-moves/

Pantheon Desktop Makes Linux Elementary

Elementary OS is an easy-to-use operating system that offers a fresh approach to running Linux.

Developers of U.S.-based Elementary OS recently released the community's annual major update, Juno 5. What makes this distro so nontraditional is its own desktop interface, called "Pantheon."

The Pantheon desktop's design is very deliberate and extremely functional. It combines some similarities of the GNOME 3 Shell with the visual finesse of the OS X

dock.

What you see and use on the screen gives Elementary OS a distinct look and feel. Even the software center app, which in typical Ubuntu-based distros has the same appearance as the Ubuntu package manager, is part of the community's well-maintained software distribution system.

AppCenter is a built-in app store for downloading both free and paid apps that are specifically designed for Elementary OS. In fact, the developers seem to stretch the concept of offering "free" open source applications.

For instance, a website statement maintains that "every single app in AppCenter is open source because we firmly believe in the world-changing power of freely-licensed code and open source software." The developers also have apps offered with a price.

What's the catch? Ultimately, there is no catch. You can pay what you want -- if you want to pay anything at all.

Source: https://www.technewsworld.com/story/Pantheon-Desktop-Makes-Linux-Elementary-85733.html

Mozilla Firefox 64 Is Now Available for All Supported Ubuntu Linux Releases

Mozilla Firefox 64.0 continues the "Quantum" series with new features and improvements, including better recommendations for US users by showing suggestions about new and relevant Firefox features, services, and extensions based on their browsing habits and enhanced tab management by allowing you to more easily and quickly close, move, pin, or bookmark tabs.

This release also makes it easier to manage performance via a new "Task Manager" accessible from the about:performance page, allowing users to view which tabs consume more CPU time so you can close them to conserve power, adds link time optimization (Clang LTO) for Linux and Mac users, as well as a new toolbar context menu option to remove add-ons.

Other noteworthy changes included in the Firefox 64.0 release are a redesigned about:crashes page to make it more clear when browser crashes are submitted to Mozilla and that locally removed crashes aren't removed from crash-stats.mozilla.com, makes live bookmarks and RSS feed preview available only via add-ons, and deprecates support for TLS certificates issued by Symantec.

Source: https://news.softpedia.com/news/mozilla-firefox-64-is-now-available-for-all-supported-ubuntu-releases-524257.shtml

FreeBSD 12.0 Released

After releasing the first beta version of FreeBSD 12.0, several more beta versions and release candidates were created in quick succession. As always, developers have the rule that FreeBSD will not be released while there are problems. Now that they are fixed, FreeBSD 12.0 has been released. FreeBSD 12.0 will be released two years and two months after the last big new version 11.0. This has since been updated twice, so that the differences from FreeBSD 12.0 to FreeBSD 11.2 are sometimes small.

FreeBSD 12.0 updates among others OpenSSH to version 7.8p2 and Clang to 6.0.1. Numerous other programs received extensions or updates. The standard library got getrandom and getentropy functions compatible with Linux and other BSD systems.

The kernel now uses the VIMAGE option by default. The ext4 file system is now fully supported. Some drivers have also been updated or added, some obsolete ones have been removed. The DRM drivers for modern chips have been removed from the kernel, they are now installable through the ports collection. The kernel has the older and simpler drivers.

There were also many updates in the Ports collection. Among other things, KDE Plasma is now available in version 5.12.5. The release notes give more details.

FreeBSD 12.0 supports many

architectures. Installation images are not available for everyone, but at least for x86 (32 and 64 bit), PowerPC (32 and 64 bit), Sparc 64 bit, ARM 64 bit, ARMv6 and ARMv7 (32 bit) with variants for Banana Pi, Beaglebone, Cubieboard, Cubieboard 2, Cubox Hummingboard, Generic Systems, Raspberry Pi B, Raspberry Pi 2 and 3, Panda Board and Wallboard. For aarch64, amd64, and i386, the project also offers preinstalled virtual machine images in the QCOW2, VHD, VMDK, and Raw formats. Images for the EC2 cloud from Amazon and the Google Compute Engine are also available.

Source: https://www.pro-linux.de/news/1/26595/freebsd-120-freigegeben.html

Opera brings a flurry of crypto features to its Android mobile browser

Crypto markets may be down, down, down, but that isn't stopping Opera's crypto features — first released in beta in July — from rolling out to all users of its core mobile browser today as the company bids to capture the "decentralized internet" flag early on.

Opera — the world's fifth most-used browser, according to Statcounter — released the new Opera Browser for Android that includes a built-in crypto wallet for receiving and sending Bitcoin and other tokens, while it also allows for crypto-based commerce where supported. So on e-commerce sites that accept payment via Coinbase Commerce, or other payment providers, Opera users can buy using a password or even their fingerprint.

Those are the headline features that'll get the most use in the here and now, but Opera is also talking up its support for "Web 3.0" — the so-called decentralized internet of the future based on blockchain technology.

For that, Opera has integrated the Ethereum web3 API, which will allow users of the browser to access decentralized apps (Dapps) based on Ethereum.

Source: https://techcrunch.com/2018/12/13/phantomware-of-the-opera/?guccounter=1

Chrome OS 71 rolling out w/ 'Better Together' Android integration, Linux updates, more

Following a Google Material Theme update in September and a complete launcher redesign aimed at tablets and other touchscreen devices, Chrome OS 71 is rolling out. A big focus of this update is improving the experience of owning a Chromebook and an Android device.

This integration between Chrome OS devices and Android phones is aptly named "Better Together." Upon updating to Chrome OS 71, a notification notes how "Your devices work even better together." Tapping the alert or heading to the new "Connected devices" section in Settings opens a prompt noting what this entails. Setup involves confirming the Google Account used on both the laptop and phone.

Available functionality varies by both phone and Chromebook. On a Pixel phone, Better Together brings together the existing Instant Tethering feature to share internet from Android to a Chrome OS device. There is also Smart Unlock that allows a nearby phone to open a paired Chromebook.

All devices should benefit from the Messages for web integration that uses the same web app with QR code pairing procedure. A Chrome support document notes that Android 5.1 Lollipop is required on your phone for Better Together integrations to work.

For the most part, Better Together helps bring together existing features that were previously in different menus. Google does note that more integrations are coming over time.

Source: https://9to5google.com/2018/12/14/google-chrome-os-71-stable/

Tails 3.11 fixes security holes and offers small improvements

With the Tails distribution, users can surf the Internet securely and anonymously via the Tor network without cumbersome

configuration. Above all, the new version 3.11 updates the supplied software.

So now runs in the background of the Linux kernel 4.18.20. The Tor Browser logs in version 8.0.4 and Thunderbird is included in version 60.3.0.

In addition to these updates, the developers have also changed two minor details: If Tails has downloaded an update, users must confirm the import of the same via a new dialog. In addition, if one operates Tails in a virtual machine, the system immediately warns the user that the host system may not be trusted.

All new features list the official release notes. Due to the bugs fixed, users should switch to Tails 3.11 as soon as possible.

Source: http://www.linux-magazin.de/news/tails-3-11-stopft-sicherheitsluecken-und-bietet-kleine-verbesserungen/

Red Hat Enterprise Linux comes to Windows 10 in the form of WLinux Enterprise

Earlier in the year open-source software startup Whitewater Foundry brought WLinux to the Windows Subsystem for Linux (WSL). Not content with creating the first native Linux distribution for WSL, the company has now gone a step further, targeting enterprise users with WLinux Enterprise.

Whitewater Foundry says that WLinux Enterprise is the first product to support the industry-standard Red Hat Enterprise Linux on Windows Subsystem for Linux.

The company says that WLinux Enterprise allows for the integration of the most stable, secure, and reliable Linux distribution with Windows 10. It adds that the software has been designed for custom deployments in consultation with Whitewater Foundry experts.

With WLinux Enterprise, the company is targeting numerous sectors such as fintech and others that must adhere to strict security and regulatory requirements.

WLinux Enterprise is available in the Microsoft Store priced $99.99 -- but at the moment you can buy it for just $4.99. It can also be purchased through other channels.

Source: https://betanews.com/2018/12/17/wlinux-enterprise-red-hat-enterprise-linux-windows-10/

Ubuntu Linux Devs Working To Further Reduce GNOME Shell CPU Usage

The development work of Ubuntu 19.04 Disco Dingo is going on in full progress. In a related development, according to a recent report from Phoronix, the Ubuntu developers are working to reduce the CPU usage of the open source operating system.

Specifically, Canonical's Daniel Van Vugt has shared his updates on different bug fixes that aim to reduce the GNOME Shell's CPU usage by a third for maximized windows.

The biggest fix comes in the form of eliminating tons of CPU usage when a window redraws while touching the dock. The public Trello board of Ubuntu 19.04 development cycle also shows that there is a long list of latency bugs affecting the Shell when the frame rate is smooth.

Moreover, Gnome Shell shutters and jadders a lot more than other shells. The developers have already fixed tons of small bugs and they're working to bring more changes to the operating system.

Source: https://fossbytes.com/ubuntu-reduce-gnome-shell-dock-cpu-usage/

Ubuntu Linux 18.04 LTS comes to Dell Precision 5530 and 3530 mobile workstations

While many people and companies are jumping on the Linux bandwagon these days, it

is important to remember that Dell has long been a proponent of the open source kernel. It has offered Ubuntu on some of its computers -- a gutsy move being such a major Microsoft partner. It may not seem major these days, but when one of the largest makers of Windows computers embraced Linux, it was monumental.

Dell remains a major Windows computer manufacturer, but its commitment to Ubuntu and open source ideology remains. The company has slowly been updating the pre-loaded version of Ubuntu from 16.04 to 18.04, with the XPS 13 (9370) getting the newest LTS variant in July. Now, two more Dell laptops are moving up to 18.04 -- Precision 5530 and 3530 mobile workstations

George further says, "2018 has been a particularly busy one for Project Sputnik. The year had barely begun when the 7th generation XPS 13 developer edition debuted. In Spring the 16.04-based Precision xx30 mobile line began rolling out and in mid-summer the XPS 13 was upgraded from 16.04 to 18.04. With today's news we're closing out the year with an upgrade of the Precision mobile line."

Source: https://betanews.com/2018/12/18/ubuntu-linux-18-04-lts-comes-to-dell-precision-5530-and-3530-mobile-workstations/

VirtualBox 6.0 Released With Support For Linux 4.20 & Improved HiDPI

Oracle has released the much awaited VirtualBox 6.0, a popular virtualization software used for running different operating systems in a virtual machine. With its release, Oracle has brought some of the major changes in the user interface and has added a swathe of new features to the application.

Amongst the most notable changes in VirtualBox 6.0 is support for exporting a virtual machine to Oracle Cloud Infrastructure, a revamped user interface with improved HiDPI and scaling support for high-end displays, 3D graphics support for Windows guests and VMSVGA 3D graphics emulation on Linux and Solaris guests.

Virtual 6.0 also brings support for surround speaker setups used in Windows 10 Build 1809, support for Hyper-V on Windows host for boosted performance and a new file manager for controlling guest file system and copying files between host and guest.

Additionally, Oracle has greatly improved the user interface that will speed up the process of setting up virtual machines. VirtualBox 6.0 will also support Linux 4.20 kernel which will be released soon. The changelog also says that the latest version of VirtualBox comes with added vboximg-mount on Apple hosts that will enable users to access the contents of guest disks on the host.

Source: https://fossbytes.com/virtualbox-6-0-released-with-support-for-linux-4-20-improved-hidpi/

Ubuntu-based Linux Mint 19.1 'Tessa' finally available with Cinnamon, MATE, or Xfce

The mainstreaming of Linux is accelerating every day. Many servers use Linux distributions, while Android remains the undisputed king of mobile. True, adoption of operating systems based on the open source kernel are still virtually nonexistent on the desktop, but as Windows 10 gets worse and worse, more and more home users may turn to Ubuntu, Google Chrome OS, and others. Just yesterday, Dell updated two of its mobile workstations to the latest Ubuntu LTS version.

If you are tired of the Windows 10 nonsense, and want to try an alternative operating system, Linux Mint is a great starting point. Make no mistake, however, even though it is a good option for beginners, many experts use it too. Today, the newest version becomes available for download -- Linux Mint 19.1 "Tessa." This follows a fairly short beta period.

Users can choose between three desktop environments -- Xfce, MATE and Cinnamon versions are available immediately. KDE is no longer an option, as the Mint devs wisely dropped that DE over a

year ago.

Source:
https://betanews.com/2018/12/19/ubuntu-linux-mint-191-tessa/

FreeBSD wants to switch to Linux port code for ZFS

Shortly after Oracle took over Sun, community Forks formed, which continue to lead the open SOURCE projects of Sun under own guidance usually to today - so also for the file system ZFS developed originally for Solaris. Despite several attempts at coordinated collaboration, porting and ZFS implementations used for different operating systems are still different. However, the FreeBSD project now plans to change its source code for ZFS to the Linux port of the file system (ZoL). This will probably be the main source for the further development of ZFS.

So far, FreeBSD has used the implementation provided by the Opensolaris extension Illumos as the output for its ZFS code. One of the responsible developers, Matthew Macy, now reports on a mailing list from FreeBSD, that the so far remaining remaining commercial supporters of the ZFS code in Illumos, however, wants to switch to the ZoL implementation in the future.

In Illumos, the development of new functions will be very small or will not happen at all. ZoL, on the other hand, will continue to be active in the future and has already received important features or bug fixes in the past that did not end up in the code of Illumos and therefore not in FreeBSD.

Source:
https://www.golem.de/news/dateisystem-freebsd-will-fuer-zfs-auf-code-von-linux-port-wechseln-1812-138351.html

Every year ends pretty much the same way for me - I clean up my files, archive away my work projects from the past 18 or so months, and spend some time refreshing my desktop's design to mix it up a little. As I've found a few real gems this month, I felt I should share them with my readers. I've put a headline above each item, so feel free to skim through and pick those that sound interesting to you.

Web Design

Not too much going on here that I haven't mentioned in separate articles throughout the year. That being said, I'm still just as excited about TailwindCSS, Gatsby, Hugo, and Docker as I was before.

Keyboard

As I mentioned in an article earlier, I also moved to a split keyboard (the Redox) earlier in the year. After using it for a good few months now, I can't imagine moving away from ortholinear keyboards ever again. That being said, I think I could be just as happy with a more normally-shaped ortholinear keyboard as well (such as a 60% or TKL). I also can't imagine moving away from QMK firmware (or at least other firmware I can program). Gone are the days I wish a key were in a different location.

Programming

I recently watched a keynote about Visual Studio Code (my code editor of choice these days), where they had a few good suggestions. They covered some aesthetic options, and also a few extensions. The main changes I'm actually using are the aesthetic options, which are as follows:

• Fira Code (with Font Ligatures) - Fira Code is a wonderful monospaced font for programmers. However, the key difference is the support for font ligatures. This means that symbols like "=>" become single glyphs, which is a godsend for legibility at times. I highly recommend looking at their GitHub page to see more details: github.com/tonsky/FiraCode. Using it is as simple as installing the font, adding it to Font Family in settings, and enabling Font Ligatures (found using the search, or under Text Editor settings).

• Color theme: City Lights. I actually like this theme so much that I've adapted it for use in my terminal as well. It's a wonderful dark theme that uses colors with excellent contrast, and alleviates my complaints with most dark themes I've used so far (specifically there always seemed to be one color that was hard to read).

• Icon theme: Material Icon Theme. It's a little brighter and more multi-colored than I probably would have preferred, but the icons are very easy to differentiate and it supports a massive number of file types. This makes browsing through long lists of files to find the right one much simpler.

File Browser

For a long time I used Nautilus, but switched to Thunar once Gnome 3 came out and some features disappeared. Then I switched to Nemo when it came out. After that, I felt like Nemo was fine, though I never felt terribly efficient getting around in it, and it occasionally had some issues with my settings in i3. I've always been fascinated by the CLI file managers (Ranger, Midnight Commander, etc.), but could never bring myself to get used to their interfaces or the muted colors. After adapting the City Lights color scheme to my terminal, however, I decided to give Ranger another shot. This ended up being a great plan, because I haven't used anything else since. Sure, it takes a little getting used to with the vim-like keybindings and lack of a right-click menu, but once you start getting the hang of it, everything seems to be much more efficient. Gone are the days of my taking my hand off the keyboard to use the mouse when browsing files (nowadays I only use the mouse when browsing the web!).

My recommendation for anyone who uses a tiling window manager or enjoys working in a terminal - find a good color scheme, and then try a CLI file manager out. Who knows? You might not look back.

Wallpapers

My approach has almost always been to randomize my wallpapers on login - that way I experience a little bit of change day-to-day. After almost a full year of the last set of wallpapers (of which there were 8), I decided it was time to move away from my 4K HDR photography wallpapers, and look for something new. To which I discovered wallpaperscraft.com. After browsing through and selecting ultrawide resolutions, I found a good bunch of wallpapers that suited my needs (not too bright, even contrast (i.e. no washed out sections), and a style I found was calming). I downloaded a bunch of images, dumped them into a new folder, and adjusted my feh command to select from that wallpaper. Since then I've removed a few wallpapers for various reasons (blurry foreground in photography, or large watermarks I overlooked earlier, and in one case an image that made my semi-transparent terminal illegible).

I also took the time to adjust my screensaver. It was previously i3-lock-fancy, which took a screenshot of my current workspace, blurred it, and set it as the background. It was a fancy effect, but more often than not took longer than I would have liked to process. Instead, I moved back to the basic i3-lock, and chose a few nice Go photos. After cutting various images to size, I ended up with one very nice image of a full-width Go board with shell stones.

Blender

While this isn't quite done yet (Version 2.8 is in beta), this is still something I'm very much looking forward to trying out. The main changes they seem to have made are user experience improvements, which has always been my main complaint with Blender. Now the left-click can select things, they're using icons instead of words like "translate", while still letting power users change and tweak their settings to what they're used to. I don't do a lot of work with 3D modelling, but I do enjoy it every once in a while, which was frustrating when it felt like every time I opened Blender I'd have to spend a good hour getting used to "their way" again. If anyone has had similar experiences, maybe give 2.8 a shot!

Cleaning

Lastly, just a little bit of spring cleaning (yes, it was in December, but nonetheless). I took apart my NUC and cleaned all the hardware (including the fans). Gone is the scent of burning dust, the sound of fans at max speeds, and the uncomfortably warm air out of the exhaust. I usually clean my computers once a year, but with the NUC being as small as it is (and off the floor), I foolishly thought I could clean it less frequently. Let this be a lesson to anyone else who has a small computer on their desk!

As always, I hope this article might have inspired at least a couple of you to try something new - even if it's something as small as trying Fira Code. If you have any issues, corrections, or questions for me, you can reach me at lswest34+fcm@gmail.com.

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

Python In The REAL World Pt.88

Pandas and Python and Code ... Oh My!

I try to keep abreast of new happenings in the Python and programming worlds in general. Lately, I have been seeing a number of Python articles having to do with Data Science or Machine Learning that involve a Python library called Pandas. I'd heard of it before, but never took the time to find out more about it. Recently, I learned about it, and I am glad I did!

Pandas, to quote from their web page, "is an open source, BSD-licensed library providing high-performance, easy-to-use data structures and data analysis tools for the Python programming language."

You can find out a lot more about it at https://pandas.pydata.org/. There is a wealth of information on the Internet about it. To install it, you can do a pip install pandas. There are, of course some dependencies for Pandas. They are:

- Python 2.7 or higher (as of January 1, 2019 it will only work under Python 3.5 or higher)
- setuptools 24.2.0 or higher
- NumPy 1.9.0 or higher
- python-dateutil 2.5.0 or higher
- pytz

So, given that Pandas is such an important library for Data Science, I plan to spend a few articles on it. Now, I am not going to try to teach you a large amount about Pandas in this quick article. I'm only going to try to show you some of the neat things that Pandas can do. We'll go into Pandas in depth in later articles.

Pandas can deal with three different types of data structures -

- Series
- DataFrame
- Panel

A Series data structure is a 1D labeled array which is size-immutable and contains homogeneous data (same data type). A DataFrame structure is a 2D labeled tabular structure which is size-mutable, which contains heterogeneous data (data of different types) and is a container for a Series structure. A Panel is a 3D labeled size-mutable array which contains heterogeneous data and is a container for a DataFrame structure. All Pandas data structures are value mutable (can be changed). Size-mutable is only available to DataFrames and Panel structures.

All of that dry information is nice, but to really appreciate how easy Pandas makes dealing with data, let's play a little bit. One of the best things about Pandas is that many times, you can do much of the work in a Python shell.

So, assuming you've gotten the Pandas library, open up a Python3 shell. The first thing you need to do is import the Pandas library.

```
>>> import pandas as pd
```

Just for those who haven't been doing Python for a while, like most of you, we use the 'as pd' to create an alias to the library so we don't have to refer to all the commands by typing 'pandas.command'. We can just type 'pd.command'.

Series Data Structures

Now let's create a simple list of random ten integers and name it 'data'.

```
>>> data =
[20,10,42,73,90,18,37,26,19,9
8]
```

Now we can create a Pandas series data structure by the .Series() command.

```
>>> sd = pd.Series(data)
```

That's all there is to it. Now let's see what it looks like..

```
>>> print(sd)
0    20
1    10
2    42
3    73
4    90
5    18
6    37
7    26
8    19
9    98
```

Notice our list of integers is

exactly as we entered it and that there is an index added for us as well. This is the DEFAULT index. We can make it different if we wish, which we'll see later.

Also, you might notice that at the end of the output from almost all of the Pandas code we will be doing, you will see something like dtype: int64. That is there to show you what the data type is. I've taken it out of the output listings to save space in the article.

Now, if we just want a quick peek at the data, we could use the .head() or .tail() command. Here is an example of the .head command showing the first five items.

```
>>> sd.head(5)
0    20
1    10
2    42
3    73
4    90
```

The .tail() command works the same way, showing the end of the data list.

If we want to simply see one item out of our list, we can use the index...

```
>>> print(sd[4])
90
```

Now assume we want to see items 4, 5 and 6. We do it this way...

```
>>> print(sd.loc[4:6,])
4    90
5    18
6    37
```

While this command looks somewhat strange, I'll break it down so it makes more sense...

sd.loc[] is an indexer command. It works with both the Series and Dataframe data structures. It can be very powerful. The command works like this...

```
.loc[rowslice,columnslice]
```

Since we are using a Series structure, we have only one column, so we only work with the row indexer portion of the command. We'll look at the .loc command some more when we deal with Dataframes.

Now getting back to custom indexes. We can create the index as a second parameter to the Series command like this...

```
>>> sd =
pd.Series(data,index=['One','
Two','Three','Four','Five','S
ix','Seven','Eight','Nine','T
en'])

>>> print(sd)
One      20
Two      10
Three    42
Four     73
Five     90
Six      18
Seven    37
Eight    26
Nine     19
Ten      98
```

One of the things that I really like about Pandas, is the built-in Data Analysis Helper functions. Here is a quick sample...

```
>>> sd.sum()
433
>>> sd.count()
10
>>> sd.min()
10
>>> sd.max()
98
>>> sd.describe()
count     10.000000
mean      43.300000
std       32.107631
min       10.000000
25%       19.250000
50%       31.500000
75%       65.250000
max       98.000000
```

DataFrame Data Structures

Now that I've shown you some of the things that can be done with a simple Series data structure, let's look at the DataFrame. I stated earlier that a DataFrame is a 2D tabular structure. Think of a spreadsheet or database table and that is pretty much what a DataFrame looks like. We can create a DataFrame from any of the following:

- Lists
- Dictionaries
- Series
- Numpy ndarrays
- Other DataFrames

The easiest way to show you a DataFrame in action, let's create a small dictionary (shown below).

```
>>> data2 = ({'Name': ['Greg', 'Sam', 'Mary', 'Lois'],
...           'Age': [65, 34, 41, 27],
...           'Gender': ['M', 'M', 'F', ' F'],
...           'Department': ['Management', 'Development',
'Human Resources', 'Development']})
```

As you can see, there will be four rows and four columns. And you can also see that the data types are mixed. Just as we did when we created the Series data

structure, we simply call the .DataFrame command with our data (there are other parameter options that we'll discuss another time).

```
>>> df = pd.DataFrame(data2)
```

Now to see what the structure looks like to Pandas, we just call the structure.

```
>>> df
   Name  Age Gender
Department
0  Greg   65      M
Management
1   Sam   34      M
Development
2  Mary   41      F
Human Resources
3  Lois   27      F
Development
>>>
```

Like I said earlier, it resembles a spreadsheet. Pretty much everything we did with the Serial structure, we can do with the DataFrame. Let's do something useful with the data. We'll create a Serial structure based on the Age column.

```
>>> age = df['Age']
>>> age
0    65
1    34
2    41
3    27
```

Now that we have our age Serial structure, let's get the sum of the values…

```
>>> age.sum()
167
```

It's SO easy to deal with data this way.

As we did with the Serial structure, we can get the data for just one row by using the .loc command.

```
>>> df.loc[0]
Name                  Greg
Age                     65
Gender                   M
Department     Management
Name: 0, dtype: object
```

Notice we have to use the index that was created for us automatically. We can't do something like df.loc['Greg'] since 'Greg' is not an index item. HOWEVER, there is a cool way to fix that. We can use the .set_index(ColumnName,inplace=True) command to remove the default index and replace it with a column of our choice. In this case, we'll use the 'Name' column...

```
>>>
df.set_index('Name',inplace=True)
```

Now we can see our data structure after the change...

```
>>> df
      Age Gender
Department
Name

Greg    65      M
Management
Sam     34      M
Development
Mary    41      F
Human Resources
Lois    27      F
Development
```

Now our index has been replaced by the Name column. NOW we can get the information on just Greg...

```
>>> df.loc['Greg']
Age                    65
Gender                  M
Department    Management
Name: Greg, dtype: object
```

One of the things we can do with a DataFrame that we can't with a Serial structure, is get extended information using the .info() command.

```
>>> df.info()
<class
'pandas.core.frame.DataFrame'
>
RangeIndex: 4 entries, 0 to 3
Data columns (total 4
columns):
Name           4 non-null
object
Age            4 non-null
int64
Gender         4 non-null
object
Department     4 non-null
object
dtypes: int64(1), object(3)
memory usage: 208.0+ bytes
```

I hope that I have generated some interest about Pandas. Next time, we'll look deeper at the DataFrames in Pandas. Until then, keep coding!

Greg Walters is a retired programmer living in Central Texas, USA. He has been a programmer since 1972 and in his spare time, he is an author, amateur photographer, luthier, fair musician and a pretty darn good cook. He still is the owner of RainyDaySolutions a consulting company and he spends most of his time writing articles for FCM and tutorials. His website is www.thedesignatedgeek.xyz .

LXD Hypervisor

In my line of work I don't really get any exposure to containers, but the landscape is changing and if you want to stay relevant, you need to know. At first it was a scary prospect, until Daniel from the Full Circle Telegram group gave me a quick introduction to Vagrant. I had seen LXC on the internet, but assumed (incorrectly) that it was just another virtual machine manager. When I wanted to look into LXC, I was told about LXD, which is LXC with bells on.

What is LXD?

LXD is an open source container management extension for Linux Containers (LXC). LXD both improves upon existing LXC features and provides new features and functionality to build and manage Linux containers.

And that is?

Containers are a lightweight virtualisation technology that don't emulate hardware.

Take the fifty cent tour with me.

We can try LXD out online without installing anything at: https://linuxcontainers.org/lxd/try-it/

For those who want to try it at home, the LXD container hypervisors are supported and created by Ubuntu team, so installation is as simple as:

```
sudo apt install lxd
```

Our overview:
1. Set up and configure LXD
2. Create our first container
3. Launch a container

Once LXD is installed, there will be a LXD group added to your list of groups. Just add your user to the group to be able to manage containers:

```
sudo adduser gewgaw lxd
```

Should the group not be created, add it yourself:

```
newgrp lxd
```

Setup

Instead of configuring LXD by hand, it comes with a handy set up:

```
sudo lxd init
```

You will need to answer the questions on screen to continue. This sets up the storage and networking etc. for you. Once you are done, verify your install with: lxc info

LXD is built on top of LXC so the lxc commands are all valid.

Creation

To create and start containers from images use the launch command: <lxc launch images: >

examples:

```
lxc launch
images:centos/7/amd64 centos-
c2
```

or:

```
lxc launch
images:opensuse/15.0/amd64
opensuse-stable-c8
```

Can you see the pattern?

Our container is now created. To confirm it was created, we can use the command: lxc list

This will give you the name of your container, the state, the IP address and if it has snapshots. All the commands are self-explanatory, starting with: lxc then what you want to do.

examples:
`lxc start, lxc stop, lxc info, lxc delete, lxc destroy, lxc create, lxc clone, etc.`

You can get a lot more info here: https://help.ubuntu.com/lts/serverguide/lxc.html

LXD is typically added to the Linux kernel. Packaged LXD distributions are available for numerous Linux distributions, including Fedora, Debian, openSUSE, Ubuntu, Alpine Linux, Arch Linux and Gentoo. We can also obtain LXD builds for Windows and OSX.

Launch

When you run 'lxc list', you will get a name in the first column. To start a container, simply type: 'lxc exec' and the name in that first column. For example:

```
lxc exec centos-c2
```

adding "--" after the command, allows us to run a command or script in that container. Another example:

```
lxc exec fedora28-c7 -- dnf update
```

To run a script you need to provide the full path to that script.

To work inside a container, add '-- bash' to the end:

```
lxc exec fedora28-c7  bash
```

When you are done doing updates or installing software, simply type: exit

That is the quick overview on LXD. There is more to it, but you will pick up everything else very fast once you have this bit under your belt.

Here you can find a list of commands: https://linuxcontainers.org/lxc/manpages/

Website: https://linuxcontainers.org/lxd/introduction/

Erik has been in IT for 30+ years. He has seen technology come and go. From repairing washing machine sized hard drives with multimeters and oscilloscopes, laying cable, to scaling 3G towers, he's done it.

Damn thing's frozen again!

THUMP

THE DAILY WADDLE

by: ErikTheUnready

Use Sendemail

Suppose your email demands are rather modest and you just need to send occasional emails from your PC, especially if you like to send information from a job which is supposed to be run regularly. This may be a problem if you don't have access to the company email server. Webmail systems (such as Gmail) can be utilised, but they are ill-suited for this purpose and installing a full-featured email system on a PC would be a major undertaking. If your ISP's email offering is sufficiently reliable despite the various restrictions they will impose, then the sendemail command will be of some interest. Use of sendemail doesn't prevent you using full-featured email clients such as Thunderbird or webmail systems.

Sendemail makes use of a facility provided by most ISP's (but not all) who provide a simple direct route into their email servers. This will be via a so-called "smart host" (or email relay, mailhost or mailhub) - officially a MTA (Mail Transfer Agent) that simply passes any emails sent to it to your ISP's mail servers for onward delivery. In order that this route cannot easily be used to send spam, your ISP will impose some limitations. They will certainly not allow large numbers of emails to be sent and they may additionally require you to provide user/password details. But the principal check on your identity is that when you make your internet connection they allocate you an IP address from the pool of addresses owned by them, so your email can be identified as being sent by one of their customers. So it is definitely not a means of sending anonymous emails!

Your ISP should be able to give full details about using their smart host (or SMTP relay). But if not, whilst any list of ISPs and their smart hosts is almost certainly wrong or out of date, one site that may be worth trying is:- https://www.iw-webhosting.co.uk/smtp_hosts.htm

Installation of the lightweight email sender (which needs no configuration) is straightforward:-

```
sudo apt install sendemail
```

This is designed to be used in shell scripts, or possibly from the command line. Because emails can take quite a variety of options, the parameters required can be rather lengthy.

The only required parameters are the senders email address, a destination address and the name of the smart host. Because email servers usually check that the IP address of the sender matches that recorded in the DNS system and we aren't able to provide that kind of information we can invent a sender's email address (as it can't be checked, it doesn't matter whether it is valid or not). This seems to work well, for example, Gmail doesn't mark these emails as Spam, although it does warn that it couldn't verify the sender's identity. Note that should the receiver reply to the email, the sender's email address will only be used if there is no "reply-to" address supplied. So if the email might be replied to, it is important to include a valid "reply-to" address.

Incidentally, this is how a lot of spam is constructed; you are presented with a faked, but reasonable seeming sender's address, but any reply is sent to the reply-to address which tells the spammer that your email address is active and used by a real person and therefore of value.

As a rather trivial example we could enter into a command line:-

```
sendemail -f xxxx@zzzz.com
-o reply-
to=myemail@mydomainname.com
-t test@gmail.com      -u
'test of sendemail'  -s
relay.plus.net
```

I have used a genuine smart host (relay.plus.net) and have specified my invented from-address with the -f parameter, but note that the domain, zzzz.com almost certainly belongs to somebody.

The optional -o reply-to= specifies the real email address where I want any replies to go to – otherwise an attempt will be made

to send replies to the zzzz.com mail server (if it exists).

The -t parameter specifies a destination address (but don't use test@gmail.com – that must belong to someone); this should be a valid email address that you have access to.

The -u parameter specifies the subject field, it is enclosed in quotes because of the presence of special characters (spaces).

Finally, I've used the -s parameter to specify my ISP's smart host (relay.plus.net).

However, since I've omitted any reference to the email body, sendemail will attempt to take it from standard input. This can be very useful in a script, but if I enter the above example into the command line, I would be prompted for some body text:-

```
Reading message body from
STDIN because the '-m' option
was not used.
If you are manually typing in
a message:
- First line must be received
within 60 seconds.
- End manual input with a
CTRL-D on its own line.
```

This isn't usually very convenient so I can specify the message body in two ways, either directly with the -m parameter (example: -m "This is the message body") or by giving the name of a text file that contains the message body (example: -o message-file=/var/log/user.log).

File attachments are included with the -a parameter, followed by a list of file names separated by spaces or other acceptable delimiters.

In a similar way, sending to multiple email addresses is possible by specifying a list of addresses for the -t parameter.

Lists of addresses can also be entered for the -cc and -bcc (copy & blind copy) parameters.

It should be mentioned that the usual smart host port number is 25, which is the default. However, other values are possible so that the smart host might read relay.plus.net:587 (if port 587 is required). In addition you might need to use the -xu and -xp parameters (for user and password), but hopefully your ISP hasn't encountered sufficient abuse of the facility to make this necessary.

I have only scratched the surface of what this command can do.

For a brief summary of what is possible, enter

```
man sendemail
```

For a fuller summary, enter

```
sendemail  --help
```

For detailed help, enter one of

```
sendemail  --help  addressing
sendemail  --help  message
sendemail  --help  misc
sendemail  --help  networking
sendemail  --help  output
```

Inkscape - Part 80

Last time, I showed you how you can use a fragment identifier in the URL that points to your SVG file in order to make a browser show only a small part of the whole image. With a suitably crafted string, you can precisely identify a rectangular section of the image to display by specifying the x and y coordinates of the top left of the rectangle, together with its width and height. I also demonstrated how you could create named views so that the coordinates are entirely contained within the SVG file and the enclosing web page doesn't need to know the gory details; all it needs to know is the ID of the view to display.

Through this technique, you can effectively turn a single image into a number of named tiles, spread out along the x and y plane. This month, you'll discover that it's possible to perform a similar trick in the z-axis. In other words, you can stack several sub-images on top of each other, and then choose to show only one of them by putting its ID into the fragment identifier.

The starting point for this technique isn't actually SVG, but HTML. The way this trick works relies heavily on inheriting certain behaviours from the HTML and CSS world that can be manipulated into doing something useful in SVG. Let's start with a simple HTML file (shown top right).

Allowing for the requirement to keep magazine listings short, try to imagine that this page has a lot of text in each paragraph, a lot of paragraphs in each section, and more sections than I've included in the sample. If you're trying out the code yourself, make sure to include enough content for you to have to scroll quite a lot to get to the bottom section.

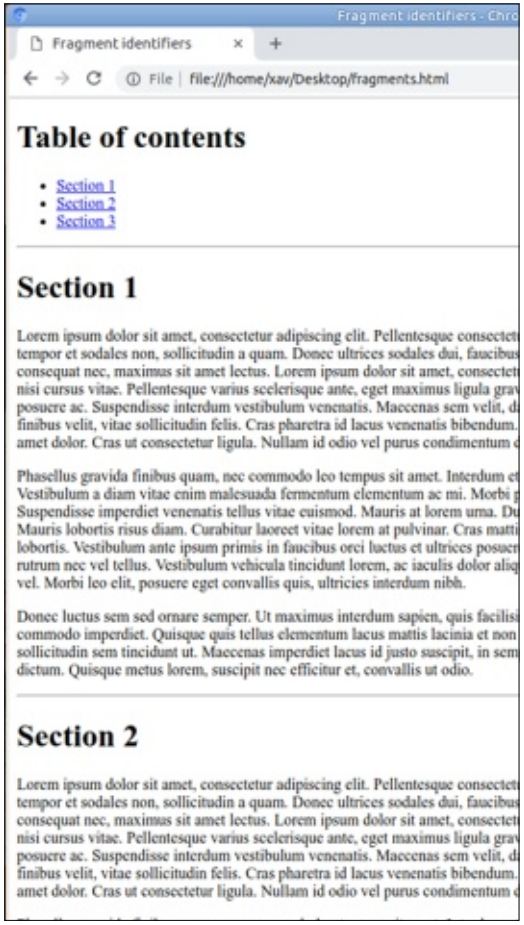
With a lengthy page of text, it would be nice to be able to jump straight to a section via a list of links at the top of the page – a table of contents. To do that, we use the <a> tag in two different forms: around each section to "name" the link target, and in the

```
<!DOCTYPE html>
<head>
      <title>Fragment identifiers</title>
</head>
<body>
      <h1>Section 1</h1>
      <p>Blah, blah, blah…</p>
      <p>More blah, blah, blah…</p>
      <p>Even more blah, blah, blah…</p>
      <hr />

      <h1>Section 2</h1>
      <p>Blah, blah, blah…</p>
      <hr />

      <h1>Section 3</h1>
      <p>Blah, blah, blah…</p>
</body>
```

```
<h1>Table of contents</h1>
<ul>
      <li><a href="#sec1">Section 1</a></li>
      <li><a href="#sec2">Section 2</a></li>
      <li><a href="#sec3">Section 3</a></li>
</ul>
<hr />

<a id="sec1">
      <h1>Section 1</h1>
      <p>…</p>
      <hr />
</a>

<a id="sec2">
      <h1>Section 2</h1>
      <p>…</p>
      <hr />
</a>

<a id="sec3">
      <h1>Section 3</h1>
      <p>…</p>
</a>
```

table of contents to create a link that will jump straight to the named target. Skipping the boilerplate code and the content of the <p> tags we get the code shown on the previous page (bottom right).

A quick trip to a "lorem ipsum" generator to fill out the content, and the web page looks something like this when loaded into a browser:



Clicking the links in the Table of Contents will scroll the browser so that the target of the link is visible on screen. The "href" attribute in those links is essentially just the fragment identifier part of the full URL. Indeed, if we modify the full URL in the browser to append "#sec3" to the end of the URL, the browser will also jump to the third section.

Okay, so appending the ID of an <a> element to the URL will make the page scroll to that target. What's that got to do with SVG? To answer that we need to introduce another part of this puzzle: the CSS ":target" selector. Here's a section of CSS that should be added to our test page:

```
<style>
      :target {
            color: red;
      }
```

This tells the browser to run this little algorithm:

- Does the URL have a fragment identifier?
- If so, does it match a target ID in the page?
- If it does, apply the "color: red" property to the matching element (in addition to the default behaviour of scrolling the element into view).

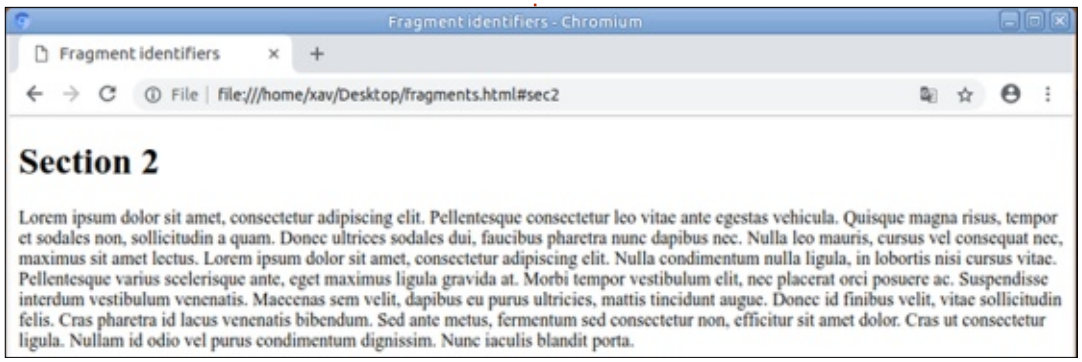
Now, as you click the entries in the table of contents or manipulate the URL by hand, the target section is rendered with red text, rather than black. We've got a way to apply a style to only the element specified in the fragment identifier. Which means we can instead do something like this:

```
<style>
      a { display: none; }

      :target {
            display: initial;
      }
</style>
```

This will hide all the <a> elements, and their descendants, then only show the one that is being targeted by the fragment identifier. As a side-effect, it also hides the links in the Table of Contents. A more fine-grained rule could deal with that, but I just deleted the whole table from my document as it's not needed any more. Now, when manually adding, for example, "#sec2" to the end of the URL we will see only the specified section on screen.

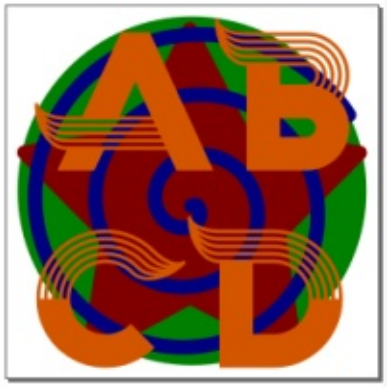
So we've now got a way to show only a single element (and its descendants), based on a label in a fragment identifier. All we need to do is transplant that same logic to the world of SVG, and the browser, using the same CSS rules as it does for an HTML page, will show only the element we've chosen.

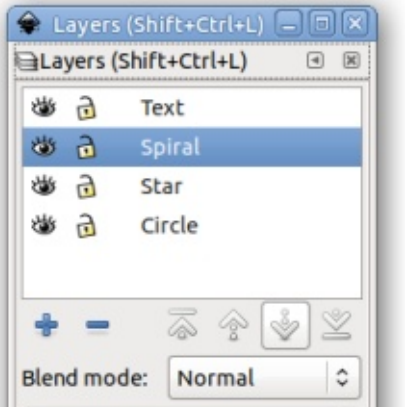
The first thing we'll need, therefore, is a type of element that can act as a container for the content we want to show and hide. In SVG terms, that would be a <g>, which in Inkscape is exposed as a group, but is also used for layers (as noted in previous instalments, layers are just groups with extra metadata). There are minor pros



and cons to each: considering that we need each <g> to have an ID, groups have a small advantage in that the Object Properties dialog (from the context menu) can be used to set the value. Although you can rename layers, doing so doesn't affect their ID, requiring a trip to the XML editor instead.

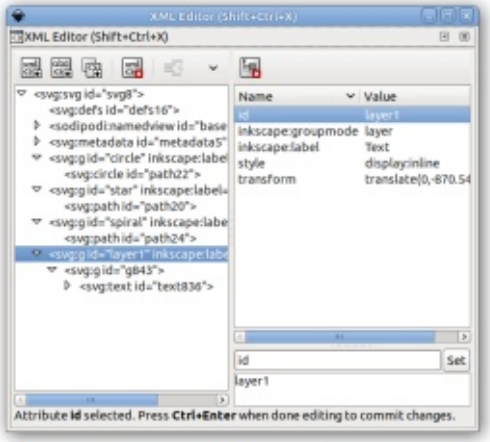
But layers have one big advantage: they're much easier to show and hide when working in Inkscape. Given that this workflow requires each image to be stacked upon the others, this advantage becomes invaluable for anything more than a couple of groups. For the rest of this tutorial, therefore, I'll be using layers. Continuing from last month's instalment, I'm going to stack the same four objects I used previously – a circle, a star, a spiral and some text – putting them into individual layers.





It's worth reiterating at this point that each layer could contain more than a single element – I just didn't want to clutter up the screenshots too much by introducing more content. In practice, each layer would typically be an SVG image in its own right, potentially containing multiple elements, groups, clones and filters. In a more complex situation, you can clearly see how the ability to hide and lock individual layers makes this method generally superior to just using Inkscape groups.

With my layers created, the next step is to open the XML Editor (Edit > XML Editor) and set the IDs for the layers. In the screenshot, you can see that I've already set the IDs for "circle", "star" and "spiral", and I'm about to change "layer1" to "text".



While you've got the XML editor open, it's worth noting what happens when you show and hide a layer. Each layer has a "style" attribute which contains "display: inline" if it's visible, or "display: none" if it's hidden. We'll come back to this later but, for now, just remember that there's a "style" attribute that holds the "display" property directly on each layer.

Once your stack of drawings is complete, and your layer IDs have all been set, you'll need to save the file and open it in a text editor. It's time to add a block of CSS that will turn off the layers, then turn on only the layer specified in the fragment identifier. The placement of the CSS in the file doesn't matter too much, but I usually put it just after the opening <svg …> tag (shown below).

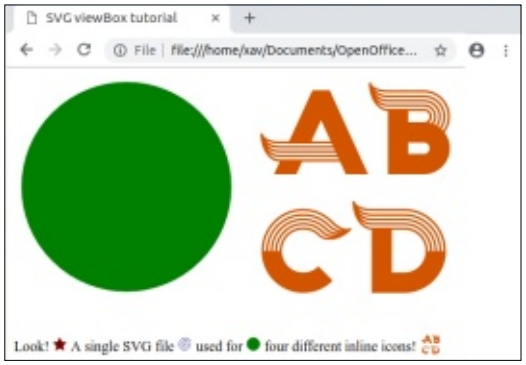
The "svg > g" syntax just means "this rule should affect only <g> elements that are immediate children of an <svg> element", so it doesn't affect any sub-layers. Otherwise, it's pretty similar to the HTML rules we used earlier, but with the addition of "!important"

```
<svg xmlns…
        …
        …>

        <style>
     svg > g {
       display: none !important;
     }


     :target {
       display: initial !important;
     }
   </style>
```

on the properties. This tells the browser that these rules should take precedence over those in the "style" attributes on the layer – without them our new block of code would be ignored. You could avoid them if you manually removed the properties from the style attributes on each layer, but as Inkscape will add them back in again if you ever need to edit the file, it quickly becomes a thankless chore. Sprinkling a few "!important" declarations around isn't particularly good coding practice, but it's a lot more practical.

With our SVG stack set up, we can reference the images with a fragment identifier in the HTML, in a similar manner to the named views we used last time (shown top right).

The resultant web page looks like this:




```
<!DOCTYPE html>

<html>
<head>
  <title>SVG viewBox tutorial</title>
</head>

<body>
  <div>
    <img src="stacks.svg#circle"></img>
    <img src="stacks.svg#text"></img>
  </div>

  <br />

  <div>
    <p>Look! <img src="stacks.svg#star" style="width: 1em;"></img>
    A single SVG file <img src="stacks.svg#spiral" style="width: 1em;"></img> used for
    <img src="stacks.svg#circle" style="width: 1em;"></img> four different inline icons!
    <img src="stacks.svg#text" style="width: 1.5em; vertical-align: bottom;"></img>
    </p>
  </div>
</body>
</html>
```

With SVG stacks, it's also possible to have another layer that sits behind all the others, but which is always visible, regardless of the fragment identifier. Consider a single background layer, with its ID set to "background". This additional CSS selector would ensure that it's always visible:

```
#background {
        display: initial
!important;
}
```

With named views and stacks giving broadly similar results, you might want to know which one is better to use. For many cases, either will work: named views arguably require more work to set up, but provide an advantage of being able to see all the individual images in Inkscape at once. Views also work better if your images are different sizes. Stacks, on the other hand, work well if your images require a single common background, or if it's easier to draw each image by stacking it on top of the previous ones to help with alignment. As is so often the case, the real answer is to try both approaches and see which one works best for you.

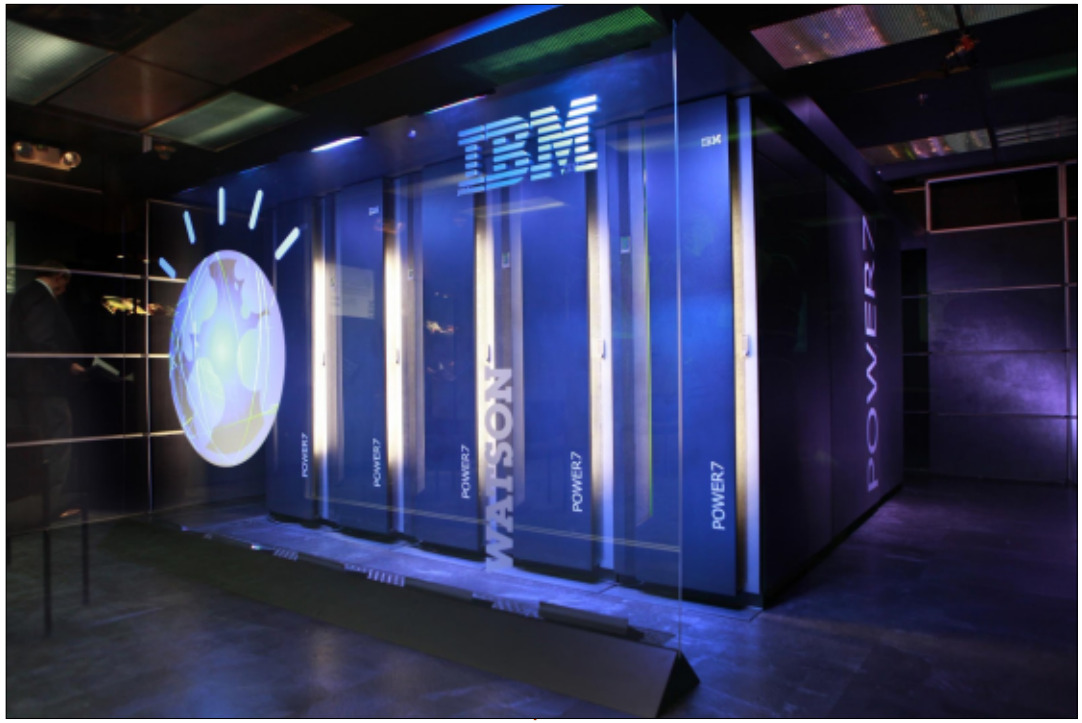
Mark uses Inkscape to create three webcomics, 'The Greys', 'Monsters, Inked' and 'Elvie', which can all be found at http://www.peppertop.com/

SUPERCOMPUTERS

Our smartphones of today are more powerful than the supercomputers of old. The first supercomputer started in England. It was known as the Atlas at Manchester University in December 1962. This system laid the groundwork for virtual machines. Additionally a program named Atlas Supervisor operated the computer, and it is considered the first modern operating system. However, in time, other computers arose. There is little information on the first supercomputer in Manchester.

The CDC 6600 Computer and the Chippewa Operating System soon became the standard for supercomputers in the mid to late 1960's. The hardware was cutting edge at the time.

The CDC 6600 cost around $2 million. Over 40 of these units were sold. They were designed by Seymour Cray at CDC. This computer weighed over 5 tons and had two spherical glass lobes demonstrating it's computing power on the distributed operating system. These systems would be used to crunch large amounts of data focused on weather forecasting, nuclear warfare, and aerodynamics. The computed answers then shaped daily living or enacted a nuclear fallout plan. There were constant improvements to these supercomputers through the years.



The most famous supercomputer is IBM's Watson. Watson starred in a 2011 Jeopardy Contest against 2 former champions. Watson won in those matches. In an untelevised session, Watson paired off against United States politicians and won. These wins illuminated the power of these computers in the upcoming future.Today, Watson is employed in various fields: customer service analytics, toy AI, healthcare, research, and other data rich fields. Interesting enough most of today's supercomputers run a Linux Variant.

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.

Retro Gaming Pt3

Last month, we addressed arcade gaming, with MAME and the set of freeware CHAMP games. This month, we're going to set up a couple of great game consoles via emulation: the Atari 2600 and the Colecovision.

The most popular cartridge based system in the early days of home video gaming was the Atari VCS, later renamed the Atari 2600. Although the system was lacking in memory and had fairly low resolution graphics, savvy marketing and shrewd leveraging of popular arcade licenses allowed this system to outlast its main rivals, the Mattel Intellivision, Magnavox Odyssey2, and Bally Astrocade. If you wanted to play Asteroids or Space Invaders at home in 1980, you had to go with the Atari. Atari was also sold through both Sears and other retail outlets, giving it a serious retail market advantage.

Some Atari programmers found ways to create fun, compelling games within the console's rather severe limitations, so even some early Atari games like Adventure and Yar's Revenge were fun to play. Later, programmers would get better and better and were able to put out some pretty nice games that really stretched well beyond what the console's limitations seemed to be, such as Defender 2, Joust, and Vanguard. Ms Pac-Man was fun to play, as was her progeny, Jr. Pac-Man. There are a lot of Atari 2600 games that are still fun to play today, as witness the popularity of the Flashback line of Atari 2600 consoles that hit the market about 10 years ago and are still going strong.

Fortunately, there is a cross-platform Atari emulator called Stella, available for Linux (and other OSs). We can install Stella using apt-get's install capability. Go to the Dash and search for 'terminal' (if it's not already visible in the display), then launch it. Use the following command:

```
sudo apt-get install stella
```

and respond to any prompts, including the request for your password. Apt-get will download and install Stella for you. To run Stella, go to the Dash (first item on the Control strip) and it will ask for the directory where you have your ROM files. I put mine under a Stella folder in my home directory, with a ROMS subdirectory, but you can choose whatever directory you want to use.

To actually play games, you'll need ROM files. You can't legally use ROM images that you don't own, but there are a handful of public domain ROM files available at http://sites.google.com/site/jbrodack/atari. Download the atari2600.zip file and extract the contents to your ROM directory – once you've downloaded the file, use your file manager to locate it (most likely under Downloads in your home directory), then double-click and hit Extract. Select the desired folder and extract the files. Now we can run Stella and play!

Go back to the Dash and search for Stella, then run it. You'll see a list of available games:

Here's Jr. Pac-Man running in Stella:

Hit F2 on the keyboard to start a game. Use the arrow keys for directional control and Space or Left Ctrl to fire.

In 1982, a new game system was announced, Colecovision. Until then, the main home cartridge-based consoles, as mentioned before, were the Astrocade, Odyssey 2, Intellivision, and the Atari VCS (or Atari 2600). The Colecovision was highly anticipated and was regarded in its time as the first home console that could actually play arcade quality games. It came with arcade sensation Donkey Kong, which honestly was not equal to the full-size version of Donkey Kong, but did a good job of capturing the fun of the original game, all the same. Some of the Colecovision games, like Carnival, Ladybug, and Venture, were legitimately as good as their arcade originals, or at least very close. I bought a Colecovision the first day it was available, and actually played Donkey Kong the next couple of days until my hands were cramping. During the console's brief history, they had to be creative with their arcade licenses, as Atari already had almost all the big game licenses wrapped up, with Space Invaders, Asteroids, Pac-Man and his wife Ms. Pac-Man, Defender, Joust, Missile Command, and more. Coleco countered with Donkey Kong and Zaxxon (and, eventually, Donkey Kong, Jr.), but they mostly had to go with less popular licenses. However, they did a great job of selecting some more obscure games, like Ladybug and Mr. Do, that were actually terrific games.

Partly due to the quirky nature of its library, the Colecovision is an uniquely interesting console to emulate. We're going to emulate it with the Linux version of ColEm. In this case, we'll download ColEm from Marat Fayzullin's webpage at https://fms.komkon.org/ColeEm/# Downloads. Download the Linux binaries for Ubuntu. This will be a .tgz file, which is a tarballed GZip file. Tarballs are a very old form of compression for Linux, and GZip is an older form of archive. Fortunately, Ubuntu still knows how to deal with these older formats. Go to the location of your .tgz file in your file explorer and double-click. Extract to your desired location (I set up a ColEm directory under Home).

Once the file is extracted, you have the ColEm emulator and the ROM for the Colecovision console itself. There are a number of public domain ROM files available for download at http://www.planetemu.net/roms/coleco-colecovision-public-domain. Select one and download (it's 'telecharger' in French if you don't want to bother translating the webpage), then unzip/extract to your ColEm directory.

Now, this is an older game emulator and does not use a modern type of interface, so we're going to have to dig out some old-fashioned Linux skills, but don't worry! Ubuntu will make this a lot easier than it was 'back in the day'. Find your ColEm folder in File Explorer. Right-click a blank area in the Files pane and select Open In Terminal. This will open a Terminal session with the directory location already set to the current directory (which is MUCH easier than navigating to it through the command line used to be, and definitely something valuable to remember). Type in:

```
colem filename
```

where filename is the name of the ROM file you want to run (case sensitive!), then hit Enter. The ColEm emulator will open with the desired game loaded and ready to play. There will be a substantial delay on the introductory screen, but your system is not locked up, that was a deliberate Colecovision delay to show the game name for a few seconds. Hit 1-8 for the number of players and difficulty level, and you're all set to start. Use arrow keys to move and Ctrl for left fire button, Space for right fire button. Here's Colecovision Donkey Kong in ColEm:

Not entirely arcade accurate, but not bad, all the same. Have fun, and we'll finish up for a while with Retrogaming with next month's column.

Next month: Part 4 of Retro Gaming!

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.

OTA-6 brings a number of fixes and improvements to Ubuntu Touch. In this release, we primarily focused on bug fixes and stability improvements.

Morph Browser

Half of the confirmed closed tickets for OTA-6 affected the Morph browser. This got to be so high, in fact, it swayed the decision to start the release process!

A number of high-visibility issues were fixed:
• Unable to restore previous session at startup
• No way to accept self-signed certificates
• Webapps cannot access local content on device
• ReCaptcha says "browser not supported"
• Media playback does not stop when a tab is closed
• Scrollbar theme does not match the system theme

We'd like to thank Chris Clime and Mateo Salta for their huge contributions to the browser during this cycle.

Oneplus One improvements

Florian made some changes which improve the experience for users of the Oneplus One:
• WLAN MAC Address is set to fallback value
• Earpiece or headset volume cannot be changed during phone calls
• The remote side of a phone call hears an echo of themselves

Hacktoberfest helpers

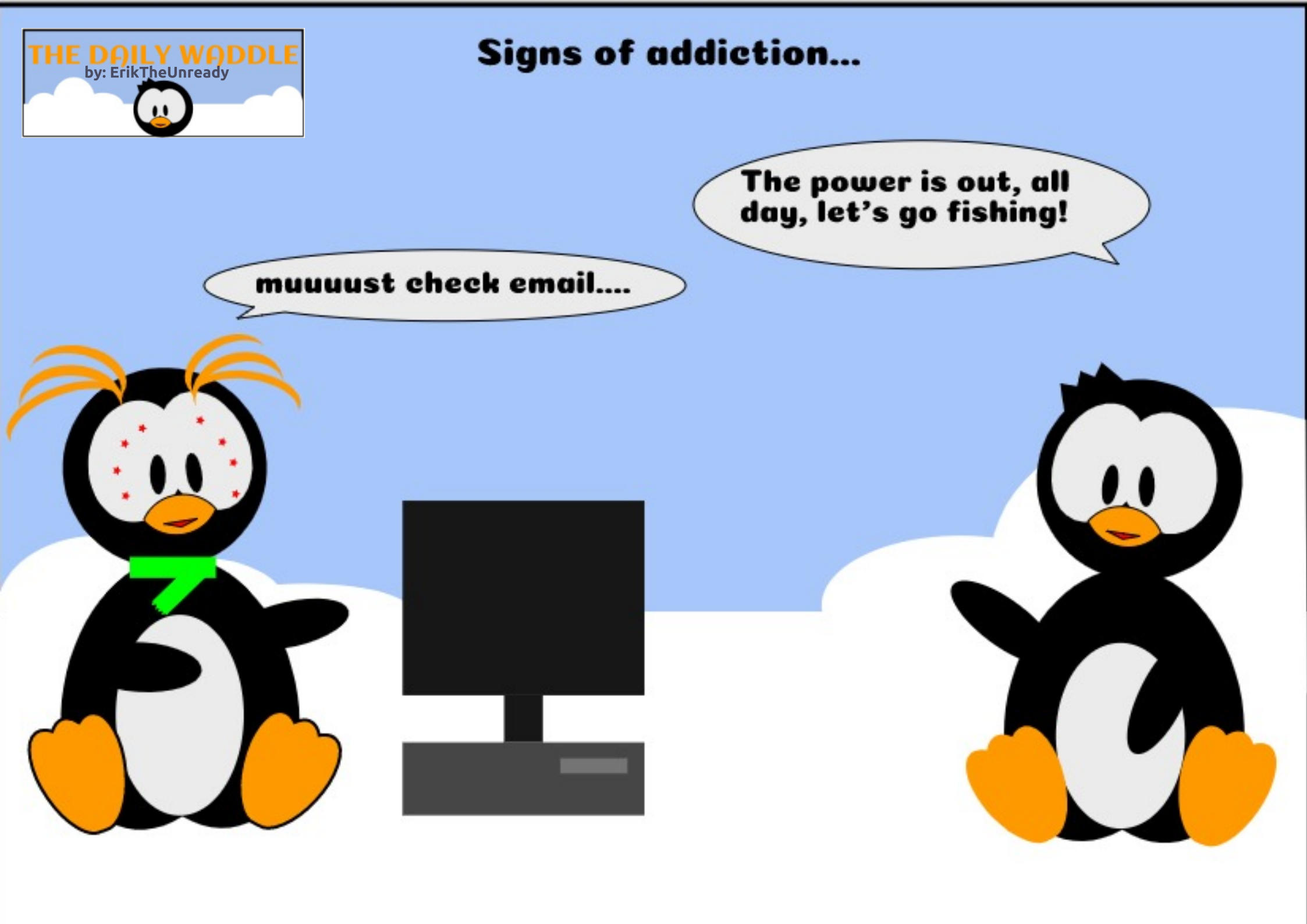
We gave a few good first issue tickets the Hacktoberfest label in celebration of Digital Ocean's Hacktoberfest! A couple of these were picked up and fixed by helpful community members:
• Welcome wizard should advance after hitting "Enter" when typing your name, thanks Miguel Gutiérrez!
• URL input box should not have autocorrect, thanks Rocky Singh!

Infrastructure changes

We've made some exciting infrastructure changes during this cycle:
• Added push gateway for Matrix, allowing apps to receive notifications from Matrix
• Moved some apps to GitLab: calculator-app, music-app, ubports-app, weather-app

In the background...

Parallel to all this, we have brought up our Edge channel to test an upgrade to the newest upstream version of Libhybris on all of our devices. This is an essential step prior to upgrading to the latest upstream version of Mir, which should fix a number of the issues we are currently experiencing. A new version of Libhybris will also make porting to devices with Android 7.1 much easier.

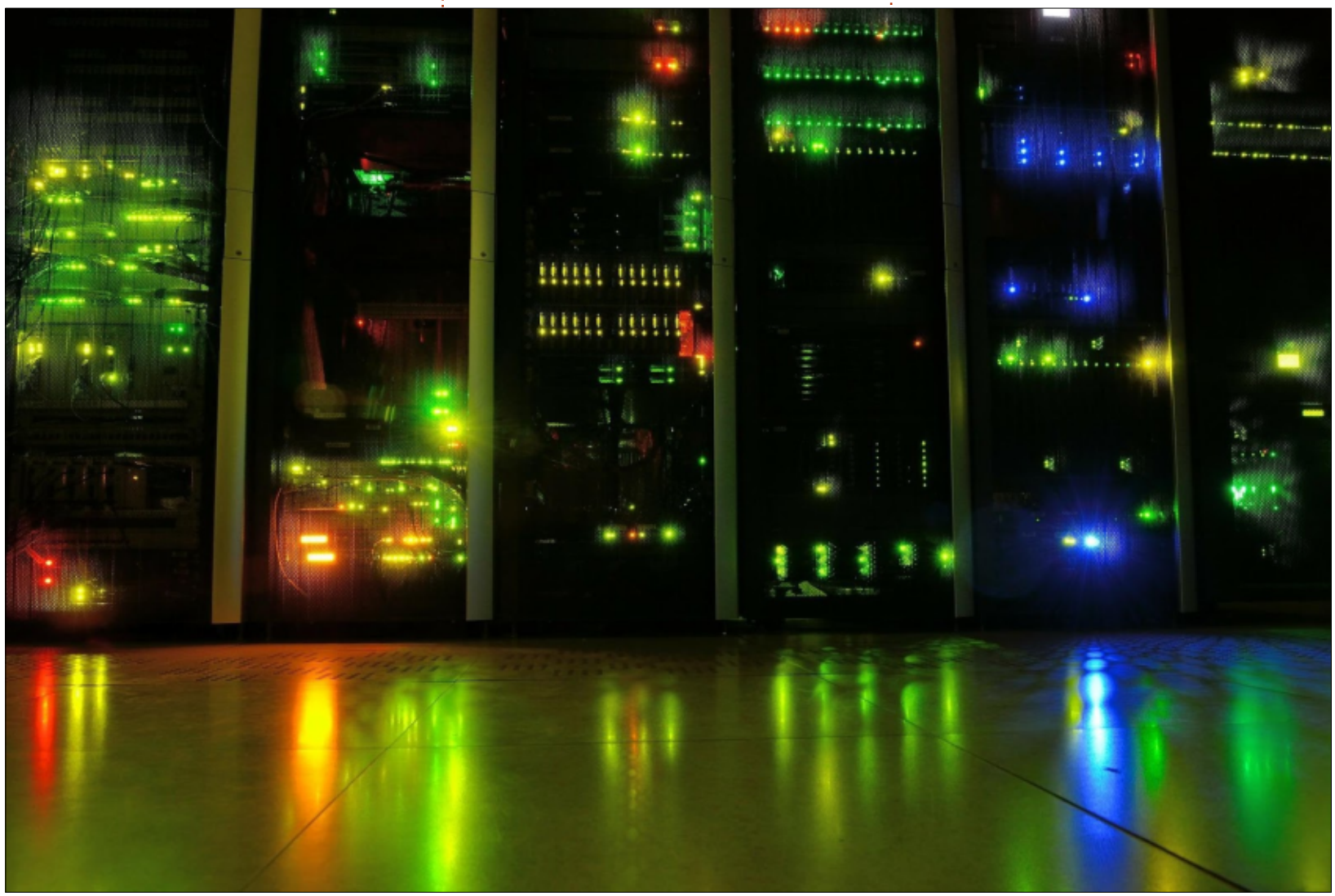

THE DAILY WADDLE
by: ErikTheUnready
Signs of addiction...
The power is out, all day, let's go fishing!
muuuust check email....

GDPR - Securing Linux Pt2

Last issue we touched on physical security of your assets. Controlling the perimeter, controlling access, monitoring said perimeter and access and providing different levels of security. This issue, we dive a little deeper into account security. We are all aware of passwords and password strength, as it get drilled into us from an early age. As computers get more powerful, it takes less time to brute-force passwords. Current thinking has us using pass phrases, rather than passwords and the lazy among us will be kicking at it, not understanding the ease at which ".password" or "password1" is compromised. It is easier to attack a system once you have access. (Compromising it from inside.) A good example of this is android rooting. This is mostly gained via privilege escalation.

Let us have a obligatory look at Linux account types. First we have root or superuser. (UID 0.) This account can do anything and is the holy grail for malicious hackers. It is good practice to NOT have an account named root or super or derivatives thereof as this would always be the go-to for script kiddies.

These days standard users have UID's larger than 1000 by default. (You can change this in /etc/login.defs) I encourage new admins to actually read through the file. Linux only gives two nickels if an account is 0 nor not, the numbering is for us mere mortals.



TIP: It is good to have an alias of this command that you can run twice a day:

```
awk -F: '($3 == "0") {print}' /etc/passwd
```

Avoid using the root account, even if you are the only user on your system. This creates habit. Block direct root logins whenever and wherever you can. Check your sshd_config file and make sure PermitRootLogin is set to no. As previously stated, this is the holy grail for an attacker. Using sudo you expand your audit trail. PAM has a module called pam_securetty to help you secure your system.

In the old wild west days of dial up internet, I used to find my ISP's server names, copy the /etc/password and run it against john the ripper and mail my ISP the new administrator passwords every week as a gag. Then Linux became a bit more professional by moving the passwords to /etc/shadow, but once again it was not a perfect solution. To make things more secure, Linux introduced PAM, the pluggable authentication module, which for illustrative purposes we can say is the man in the middle between the user and the password file. This creates an additional layer of security. PAM however can also be configured incorrectly, so it is vital for administrators to know the options in the pam.d manpage. PAM is great for enforcing strong passwords. Modules like "pam_pwquality" is unmissable in your arsenal. I will not go into password age as changing passwords on a regular (monthly) basis lets users create patterns that can be learned by malicious actors. Controlling account access is just as important as controlling physical access. I should point out multi factor authentication at this stage, again PAM modules such as Google Authenticator, that will message you a code when trying to SSH into a system. If you do not trust Google, there are other options! Even your VPN should be at least two factor secured. A good example is those credit card or USB-type keys that display a code when you press a button. Using multi factor authentication can really tighten up security.

Documentation is another thing you cannot be without. If a new user is created, let there be documentation for it, signed off by someone who is responsible for that person. If a user leaves, that documentation can be the reminder that that you need to change their shell to /sbin/nologin. It is easy to forget and stale user accounts are an attack vector. Back in the day it used to be /bin/false so be aware of this in legacy systems. PAM also has a nologin module you should be aware of. Speaking of paperwork, have a code of conduct for your users to sign, the last thing you need is users sharing accounts.

Intrusion prevention systems is another thing you cannot be without. You will commonly find two flavours, NIDS and HIDS. Use both! On HIDS we have OSSEC, Sagan, AIDE, Samhain and the most popular, fail2ban. On NIDS we have Security onion, SNORT, Bro, Open WIPS-ng. There are quite a few commercial offerings too.

It is good practise to keep your log files on another server. The last thing you need is not to be aware that your system has been compromised. Make time to review /var/log/messages , /var/log/syslog , /var/log/auth.log and /var/log/secure - these are generic locations and may vary. With this said, I would like to reiterate that root passwords on different systems should not be the same!

There are, of course other account options, like open LDAP etc. These single sign on locations are also high value targets for attackers as this allows them to traverse the system with ease. I am not going to cover them all, there are too many for the scope of this piece, but suffice to say, rather be paranoid with any of them. The GDPR penalties have started rolling in.

Erik has been in IT for 30+ years. He has seen technology come and go. From repairing washing machine sized hard drives with multimeters and oscilloscopes, laying cable, to scaling 3G towers, he's done it.

2018 Survey Results

So, finally, here are the survey results. The survey ran from late April to early December.

All Devices

We had a total of 475 responses, over 1,099 visits (with 874 being unique visits) a completion rate of 54.3% with the average time to complete being almost 25 minutes.

From 475 responses, 419 were desktop/laptop, 32 from smartphones, and 24 from tablets.

From the 1099 visits, 940 were desktop/laptop, 99 from smartphones, and 60 from tablets.

About You

From 475 answers, 458 were male, 17 were female. That's 96% male.

Also with 475 answers, 153 (32%) were 61+, 134 (28%) were 41-50, 104 (22%) were 51-60, 58 (12%) were 31-40, 23 (5%) were 21-30 and only 3 were 20 or under.

From 475 answers on location, we have 112 (23%) from the U.S., 107 (22.5%) from 'other', 51 (10%) from France, 35 (7.5%) from the U.K., 31 (6.5%) from Italy, with Australia, Canada, Asia, Latin America Germany, etc. all having between 10-20 responses.

With 473 answers on using Ubuntu/Linux, 454 (96%) use it at home, 356 on a laptop, 320 on a desktop, 180 at work, 31 on smartphone, 29 on tablet and 18 on a Chromebook.

32-bit

With regards to 32-bit hardware we had 473 answers. 231 (48%) have no 32-bit devices, 122 (25%) have one device, 60 (13%) have 2 devices, and a total of 12% have 3 or more 32-bit devices.

190 (46%) said they did plan on phasing out their 32-bit devices. 219 (53%) said no.

From the 190 who did plan on phasing them out, 137 (37%) said they'd phase them out over 3 years. 115 (31%) said they'd phase them out over one month. 48 (13%) said within two years with the same saying within one year. Only 5% said over six months.

64-bit

Regarding 64-bit, 451 answered and 111 (25%) said they have 3 devices that are 64-bit. 109 (24%) said they have 2 devices. 84 (19%) have 6 or more devices. Only 57 have 1 device, 53 have 4 devices, 32 have 5 devices. Only 5 said they have no 64-bit devices.

Encryption

Out of 473, 344 (72%) have no encryption on their drive(s). 70 (15%) have encrypted their /home partition. 66 (14%) have encrypted one or more folders, and 50 (11%) encrypt the full drive.

Cloud Storage

With 369 answers, 205 (56%) use Google Drive/Docs. 157 (42%) Dropbox, 62 (17%) OneDrive, 53 (14%) OwnCloud, 25 (7%) Box, with 98 (27%) using 'other' cloud storage.

Out of 443, 330 (75%) said the cloud storage was not their backup. 113 said it was their backup.

Ubuntu/Linux

From 475 answers 358 (75%) said they had tried to replace Windows with Ubuntu and had NOT been stuck/frustrated while 117 said they HAD gotten stuck/frustrated.

Some of the reasons for being stuck/frustrated were; couldn't make a wireless connection, hardware/software compatibility, gaming support, printer drivers, and requiring certain software for work/business.

For obtaining Ubuntu a resounding 97% download the ISO with 1.5% each using a magazine DVD or buying a DVD/USB.

From the 475 answers, 271 (57%) upgrade every LTS release. 109 (23%) upgrade every six months, while around 7% each will upgrade yearly, hardly ever or every two years.

Out of 472 answers it seems that 297 (63%) use Ubuntu, 117 (25%) use Xubuntu, 19% each use Kubuntu, Lubuntu, and 'other'. Only 6% use Budgie.

From 475 answers, 271 (57%) have switched to Ubuntu/Linux entirely. 204 said no.

To convert entirely; drivers for printers, gaming support, have [insert name of proprietary piece of software] run on Linux, better wifi support, and (of course) many wanting Microsoft Office to run in Linux.

With regards to WINE, 199 (42%) out of 475 use it to run Windows software. 276 do not. From 346 answers it seems that most rate WINE about a 5, 6 or 7 out of ten.

Software that people want to see on Linux include; Quickbooks, Pronote, AutoCAD, Lightroom, MS Office, Sketchup, iTunes, and many (unnamed) games.

We have 302 (multiple choice) answers asking what you use in a multi-boot machine. The answers showed 148 using Windows 10, 141 for Ubuntu, 83 use Windows 7, 40 for Xubuntu, 32 for Kubuntu, 22 for Lubuntu, 19 for Windows XP, 10 each for Budgie, Windows 8 and Windows Vista. 79 answers for 'other'.

From 475 answers, 183 (39%) run Windows in a Virtual Machine. 292 do not.

Ubuntu/Ubports Touch

From 475 answers we have only 18 (4%) who did buy an Ubuntu Touch device. That's 457 who did not.

From 347 answers only 8 (2%) updated Ubuntu Touch to Ubports Touch. That's 339 who did not upgrade.

From 421 answers we have 10 (2.5%) who did remove Android from a device to flash it with Ubports Touch. 411 did not.

From 409 we have 17 (4%) who removed Touch from a device and flashed it with Android. 392 did not.

Other Distros

From 412 (multiple choice) answers it seems 173 like Debian, 157 Mint Cinnamon, 103 Mint Mate, 69 Fedora, 52 OpenSUSE, 45 Manjaro, and around 35 each for Arch, RedHat, and Puppy Linux. Around 20 each for FreeBSD, Solus Bodhi and Gentoo. 58 votes for 'other'.

Desktop Environments

From 473 (multiple choice) answers we have 231 for GNOME, 137 for XFCE, 127 Cinnamon, 115 Mate, 103 KDE, 89 LXDE, and around 20 each for Budgie, Enlightenment and Pantheon. 33 for 'other'.

Learning Linux

Some responses asking how you learned Linux were; online tutorials, distrowatch, books/magazines, friends, trial and error (a lot of people said that), forums, and University.

Responses to what motivated you to learn Linux; didn't like Windows, wanted a more secure OS, job opportunities, free software, curiosity, wanted to keep an old PC, sick of Windows crashes.

Languages

From only 282 (multiple choice) responses it seems developers like; 184 (65%) Python, 93 (33%) C/C++, 86 (30%) PHP, roughly 50 each for Java and Javascript, and roughly 15 each for Ruby, Assembly and Perl. 55 (20%) chose 'other'.

Full Circle Magazine

From 475 responses it seems the majority prefer to download the magazine from the FCM site (93%) with the remainder using Issuu.

Out of 475, 394 (83%) prefer the PDF, 21 go for the EPUB. While 60 (13%) go for both.

From 475, only 110 (23%) listen to the Weekly News. 365 (77%) do not. Out of 254, 145 download the FCWN from the FCM site, 63 (25%) play it on the FCM site, roughly 20

each use a podcast app on Android and on Apple. Only 3 listen in TuneIn Radio.

Articles

Ubuntu News averages a 4 out of 5
Command & Conquer averages a 4 out of 5
The How-To's average a 4 out of 5
Inkscape averages a 3.5 out of 5
Researching With Linux averaged a 4
Everyday Ubuntu averages a 4
Linux Labs averaged a 4
My Story and My Opinion each average a 3.5
Reviews averaged a 4
Q&A averaged a 4.5

Some of the subjects you'd like to see covered in FCM were; hardware driver fixes, hardware and network issues, terminal, firewall tutorial, security, the return of My Desktop (Editor's note: if I don't receive any, I can't print any!), distros for old machines, home networking (DHCP, etc), video editing, linux commands, [retro] emulation, Arduino/Pi, CAD tools, and Conky.

Conclusion

So there you have it. I want to end by saying a massive thank you to all the people who took the time to go through the survey. Also a massive thank you to all the nice people who wrote such nice comments saying how much they love the magazine. It's those comments that keep me (and I'm sure the writers) going every month.

Write For Full Circle Magazine

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://bit.ly/fcmwriting

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

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

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

• Do not use tables or any type of **bold** or *italic* formatting.

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

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

Translations

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

Reviews

Games/Applications

When reviewing games/applications please state clearly:

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

Hardware

When reviewing hardware please state clearly:

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

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

MilkyTracker

From the web: *MilkyTracker is a multi-platform music application for creating .MOD and .XM module files. It attempts to recreate the module replay and user experience of the popular DOS program Fasttracker II, with special playback modes available for improved Amiga ProTracker 2/3 compatibility.*

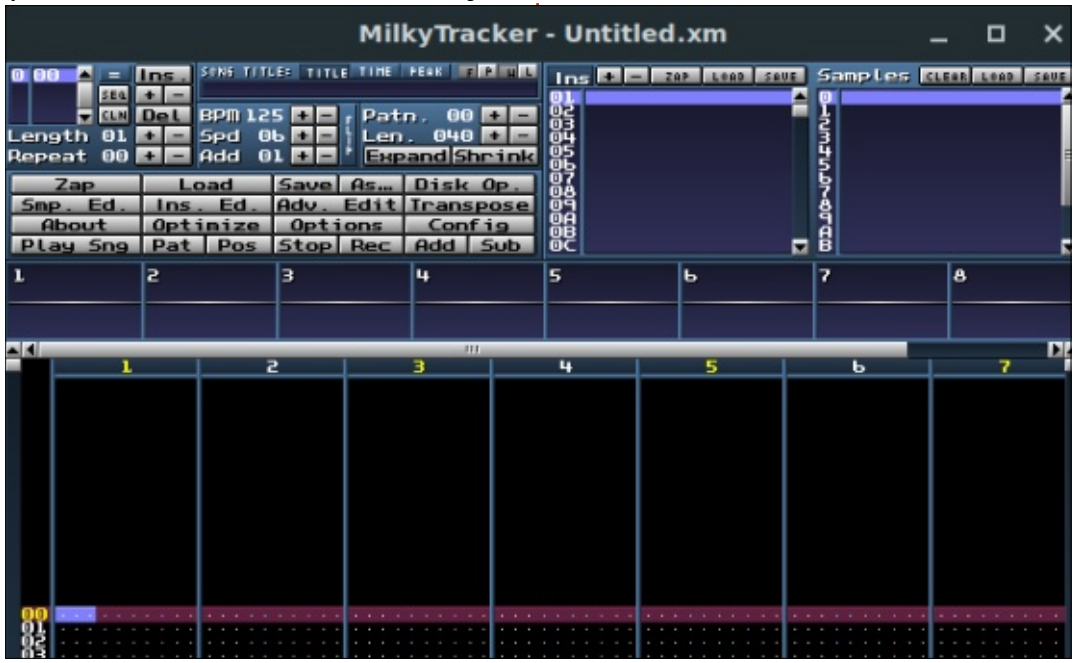
Ubuntu 18.04 brought Ubuntu users into version 1.2 of this application. Ubuntu 16.04 users are stuck on version 0.9.

If you have never heard of MilkyTracker, I can understand it. MilkyTracker is a music player of sorts, but also a music creator. It uses patterns and mathematical functions to produce music. Though one can import .wav files into MilkyTracker, you can also draw your own samples. Yes, you read correctly, draw your own. If you are not musically inclined and have no formal training, the effort to use this amazing piece of open source software may seem high. Stick with it and it may bring you great joy. I am not saying it will make you the next Ben Daglish, I am saying it can be fun!

If you don't know who Ben is, listen to this: https://www.youtube.com/watch?v=ofSjJop6lOY - and know this amazing tune fits in a couple of kilobytes!

The most notable thing about MilkyTracker is that the tracks you make will be very small (have I mentioned the tiny size before?) compared to modern music production software. It is mostly used in the demo scene and "cracktro's" because of this. Music produced in MilkyTracker is often referred to as "chiptunes".

This is the main screen that will greet you when you open MilkyTracker, (fig1). It does nothing when you push 'play song'. That is because there are no music or samples loaded. To make music, you need samples. Here is a quick resource for samples: https://modarchive.org/forums/index.php?topic=3179.0



The KIA Archive contains hundreds of tiny samples for you to get your chiptune groove on.

Unlike other samples you will find on the internet, .xi files are not a recording of a sound, rather the wave pattern that an instrument makes.

If you just want to listen to music, that is fine too. Go to the mod archive - https://modarchive.org/ - and download a tune to listen to in MilkyTracker. You can change the file on the go, speeding it up, turning off tracks, and more. Some modern players like VLC will play a MOD file, but will not allow you to tinker with it.

Module files store digital samples and several "patterns" or "pages" of music data in a form similar to that of a spreadsheet. These patterns contain note numbers, instrument numbers, and controller messages. The number of notes that can be played simultaneously depends on how many "tracks" there are per

pattern. One can have more than one instrument per track also. MOD are by no means the alpha and omega of the file format. There are IT, XM, S3M and many more, so feel free to explore the depths of this resource.

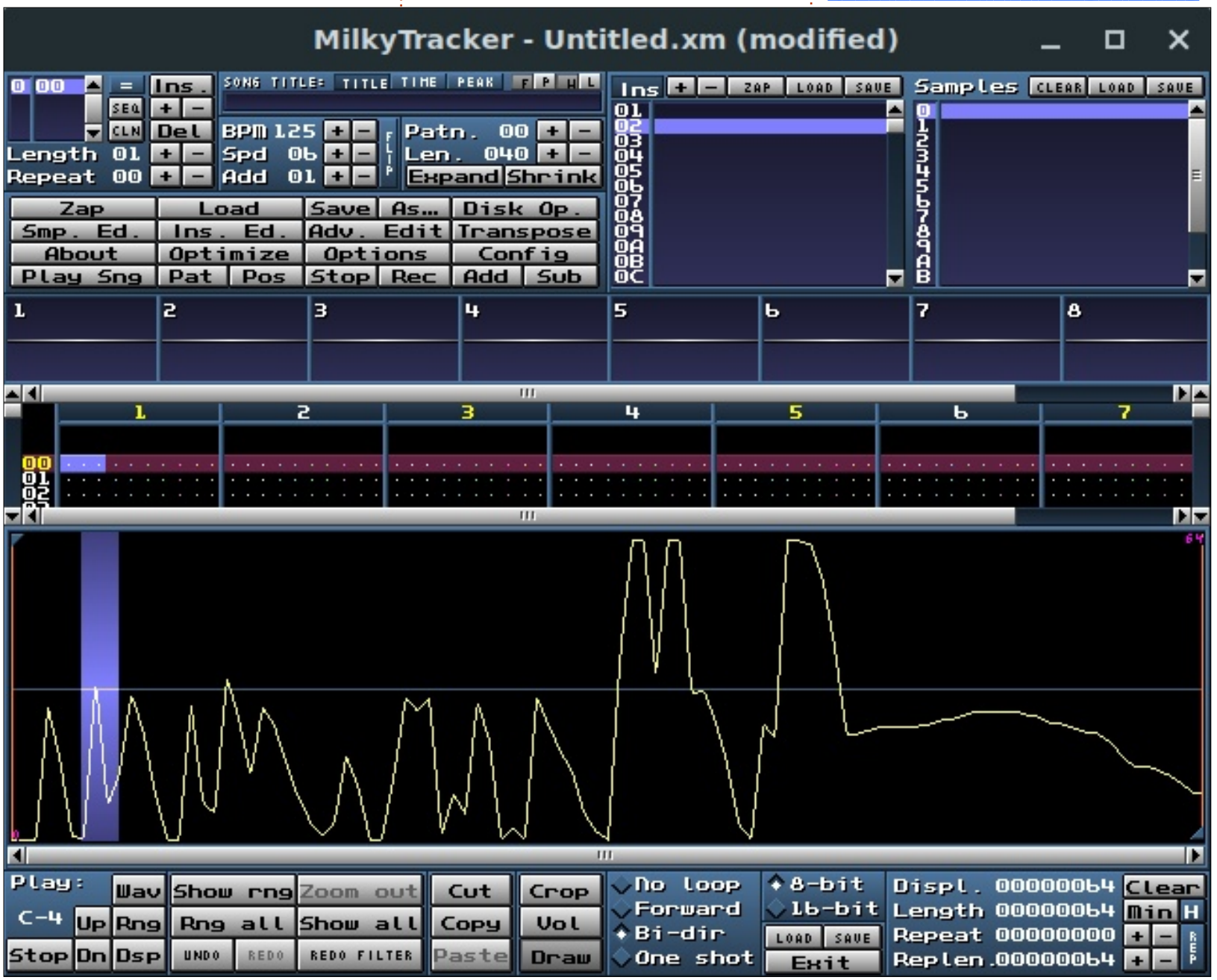
Remember I said you could draw your own sounds? Simply click on Smp. Ed. (Sample Editor) and a window opens at the bottom of the application. Right-click inside the space and create new. Leave the defaults (you can make the sample smaller if size is an issue) 100, and click OK.

In the very bottom part, change the note to bi-directional so that the sound does not just make a pop, then click on draw. Now draw a sample and hold down a key on your keyboard, for instance "d". You will hear your waveform. You can change your waveform in real time whilst holding down a key.

You can load a MOD File and open the sample editor to look at the samples used. You move between samples in the top right. "Ins." means instrument and most of the time they are housed here and on sample 0 in the next pane.

TIP: even though you can use a mouse with MilkyTracker, your keyboard will be your biggest ally. Learn the keyboard shortcuts. Your fingers will be on the keyboard anyway, to play music.

If you would like an in-depth how-to, drop us an email at: questions@fullcirclemagazine.org



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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.

DistroWatch.com
Put the fun back into computing. Use Linux, BSD.

Q&A

Compiled by EriktheUnready

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

Welcome back to another edition of Questions and Answers! In this section, we will endeavour to answer your Ubuntu questions. Be sure to add details of the version of your operating system and your hardware. I will try to remove any personally identifiable strings from questions , but it is best not to include things like serial numbers, UUID's or IP addresses.

My very first IT only job, I was paired with a "senior" tech. (Basically I was to carry his tools). 'Our' first call out was to a meat processing plant. The premises right next door to the plant housed a tannery. If you have never worked at / passed a tannery, I can not explain the smell. Needless to say, it is very bad on a hot day. This day was unusually hot. As we came to the entrance, (inside the compound) someone had left a rack with lungs out, that I assume would go into the processed meat. It was a black mass of flies. This and the wafting rotten smell of the tannery made the senior tech double over and lose his lunch. He was so violently sick, I had to carry him out. Not the squeamish type, I went in and repaired the printer. I came out to find a deathly pale technician in dry heaves. I popped him in the back of the vehicle and went back to the office. It was the first day on the job AND my first promotion to field service technician. What I am trying to bring across here, is sometimes there are things you do not want to do, but doing them can have unexpected rewards. Should your system break, do not be afraid to roll up your sleeves and try to fix it. You may learn more about Linux and computers in general than you ever dreamed you would.

Q: Windows 10 is making me sad. I keep it for gaming. Now that Linux has proton, I want to know if I can install Ubuntu over windows?

A: Boot from an Ubuntu DVD / Thumb drive or whatever, and you will see an option "Erase entire drive and install Ubuntu." Use this option if you have backed up all your saved games and data from windows.

Q: I want to boot my Dell T20 server off a SSD and use the drive I am booting off as a mirror for data. My brother gave me his old 120GB SSD when he got a new one. The T20 will then be a media server with Ubuntu 18.04. It is Transcend. How do I set up Trim?

A: Good news, you don't have to do anything. Installation of Ubuntu server 18.04 on an SSD, the OS will manage it for you.

Q: I have Ubuntu Budgie 18.04, and when I press alt+F2, some menu comes up instead of run command. How to fix?

A: According to the Ubuntu manpages (http://manpages.ubuntu.com/manpages/bionic/man1/budgie-run-dialog.1.html) this is still the case, but I see what you mean. I use F12 to start Tilix to quickly run a command. You can assign any keys you would like in the keyboard settings, should you want to change them. If you really need a shell only, switch TTY with ctrl+alt+F2.

Q: Hi FCM. Since xubuntu 16.04, my system does a filesystem check on boot, and I can't stop it with a ctrl-c combination, and it takes a few minutes to do. Any idea how can I stop this ?

A: There are a couple of ways you can prevent it, however it usually points to a problem with either your disk or shutdown procedure. First things first, check your hard drive for errors using a program such as GSmartControl, it may be error free, but may be old, where there are retries reading sectors. If it is a desktop PC, check to see if the SATA cables bend more than 90 degrees. Also check that the modes are correct.

If you insist on disabling it, there are a few ways. When

rebooting, you can use the -f flag to prevent a disk check. You can also append fastboot to the end of your kernel line in your grub.conf (I would recommend this). The third way is to edit your /etc/fstab file (not recommended for newbies)

Q: I am trying to send an email and I receive 502 error. Google says bad gateway. What to do? My machine is Ubuntu i5 with 4GB memory and Zimbra email.

A: 502 error on a web page is a gateway error. Error 502 on email is another beast. I would suggest you update Zimbra first and if that does not work, get your ISP's direct mail server address should you be sending via a subdomain.

Q: I have Voyager 16.04 installed and it comes with Kodi pre-installed. I have read about it a lot in the news. Does this mean I get illegal TV. Will I be arrested? How do I avoid detection?

A: Do not buy into the FUD or scare tactics. There is NOTHING illegal about Kodi. The thing is - that some people actually sell mini PC's and media players loaded with Kodi and have added "illegal bits" to it calling it "fully loaded Kodi boxes". These devices are set up to receive streams that some people re-broadcast that they are not allowed to do, making money that was supposed to go to the original broadcaster. Sometimes these boxes have hard drives loaded to capacity with pirate content, movies and series. Voyager supplies it only as a media centre.

Q: I have Ubuntu 12.04 and I would like to play HVEC videos. How can I get the codecs? VLC also will not upgrade. I have a 740 Nvidia card, so it should be possible.

A: I have a question of my own: Why are you still on Ubuntu 12.04? There is no reason to be. Rather upgrade to 18.04 and enjoy the benefits. If you have an application that runs only in 12.04, use Virtualbox and install 12.04 in there. The problem with VLC on Ubuntu 12.04 is, if you want the latest, you will need to build it yourself. Ubuntu 12.04 no longer receives any updates.

Q: What is the best laptop to buy for Ubuntu? It must be available in India.

A: Best is a relative term, and we do not endorse any laptops at FCM. (Anyone wanting to sponsor us, please get in touch). I can, however, point you to the Ubuntu hardware certification page, where you will find hardware guaranteed to work with Ubuntu. You can then print out a list and match that to your local suppliers. Just look here: https://certification.ubuntu.com/desktop/models/?category=Laptop

Q: On Ubuntu, my Photos open with Darktable automatically, but I don't want it to when I insert my SD card into my laptop as it is slower than government employees. Darktable takes too long, but unlike right-clicking a jpeg file and saying "open with", this is automatic, regardless of what I view my photos with.

A: In Ubuntu settings, go to devices, then removable media, and choose your preferred program on the right hand side.

Q: Hello friends. What is the most safest way to store sensitive documents on Ubuntu that nobody can find it? Not even forensics or hacking to access.

A: Remember, while your machine is on and running, most files will be accessible. My suggestion is to do a full disk encryption first with LUKS, then install Veracrypt, create a hidden container on the drive with a very long password and use a USB key as the second part and then do not access the container unless you need to. Turn off history. This gives you "double" protection that your files will not be read if your laptop gets stolen. If you're paranoid to the max, create another encrypted folder within that encrypted folder and use a different encryption program to encrypt that. (Inception stuff!). If however, you are just hiding your porn stash from your mum, then a hidden encrypted folder is all you need.

Q: Can I use Skype in Ubuntu?

A: The short answer is yes! I do not want to sound like RMS here, but it is proprietary software. (non-free as in freedom). Skype was bought by Microsoft, which means nothing you say while using Skype is private, and it may be recorded for misuse against you later. (If you have any doubt about this, follow the Kim Dotcom case).

You should be able to find Skype in the software repository.

Q: How do I make a backup and recovery for my Dell laptop that came preinstalled with Ubuntu with the Dell recovery please?

A: I don't have experience with that software from Dell, but I will point you to a web page at: https://www.dell.com/support/article/us/en/04/sln265982/how-system-recovery-and-backup-works-with-ubuntu-linux-on-your-dell-pc?lang=en

Q: Is Adobe Reader safe to use on Ubuntu? (I need to use it to read encrypted PDF's)

A: No, Adobe would be my first attack vector. It has more holes than a sieve and there are archives of exploits for it on metasploit. The latest version of document viewer supports encrypted PDF's. You can also try other PDF readers until you find one you like, there is okular, epdf reader, evince, mupdf, etc.

Q: I have upgraded to Ubuntu 18.04 successfully from Ubuntu 16.04. I have one minor hiccup, my Tomtom sports connect has stopped working. How can I fix this?

A: Tomtom sports connect is not supported on Ubuntu, I see. According to this page: http://uk.support.tomtom.com/app/answers/detail/a_id/24741/~/linux-version-of-tomtom-sports-connect

That said, I would just uninstall that .deb file and do an apt-get autoclean, reboot, and install it again. You will have to lean on Tomtom if it does not work, for a solution.

Q: Is Ubuntu a good development platform?

A: Yes. You can even install Visual Studio on Ubuntu if that is your favourite IDE.

Q: How can I prepare for an Ubuntu junior administrator interview?

A: I can not talk for other companies or other countries, but when I interview any junior admin, it is less about the skills and more about fitting in. A friendly person who knows a little less is more desirable than a know-it-all with bad manners. As a junior, sure you need to know the basics, but you will be learning a lot very quickly. When you go to the interview, shine your shoes, comb your hair, it may not be needed, but it demonstrates pride in your work. With all that out of the way, have a read here: https://www.guru99.com/introduction-linux.html

Q: Every now and then, when I wake my Lenovo laptop I cannot connect to the wireless network at home. I can turn the wifi off and on, but it will not connect. It does not matter how many times I put the password in, it will not connect. I never had this problem with Windows 8 on the laptop.

A: Most Lenovo laptops are made for Windows only, and Lenovo locks down their BIOS's so that you can not install a friendlier Linux-compatible WiFi card. Restarting the laptop or WiFi router will solve the issue. If your laptop accepts a proprietary driver for WiFi, use that. Should you have the proprietary driver installed, uninstall it and test. You could alternatively also replace the Wifi card with a decent one, just do your homework first.

Q: I am a new Linux user. How do you check how many CPUs are there in Linux system using the command-line option?

A: The nice thing about Linux is that there are multiple ways to do something. On Ubuntu try: lscpu or cat /proc/cpuinfo or even things like htop, lshw or hwinfo. There are of course many more!

Q: Random question: I read that one can configure Ubuntu Linux to automatically download and install security updates when released. Care to enlighten me?

A: The answer would be a bit long for Full Circle's Questions and Answers, so I will point you to a web resource: https://www.cyberciti.biz/faq/ubuntu-enable-setup-automatic-unattended-security-updates/

Q: I have installed Ubuntu via the windows store, and I am trying to set up ntfs-3g symlinks like this tutorial: https://serverfault.com/questions/165389/create-ntfs-symbolic-links-from-within-linux, but it won't work.

A: Linux in Windows does not quite behave like Linux in the wild without Windows. Linux wants to be free and run with the gnu herd, and does not do well in captivity. That captivity is of course the Windows sub-sytem for Linux.

Q: I am trying out Ubuntu on Wayland at the moment, but some things don't work. I just tried a few programs like Atom, and it will not work. The only change is Wayland - everything tells me Wayland is the reason. Could it be?

A: Yes, your reasoning is correct, Wayland is the culprit. However, there are fixes. Electron is based on Gtk2, which can't run natively on Wayland. Fortunately, the XWayland Server provides backwards compatibility to run any X client on Wayland. You may have to edit your weston.ini file:

```
[core]

modules=xwayland.so
```

Q: I have managed to mess up my user's .rc file. how do I fix it?

A: You did not say which .rc file, so I am going to make some assumptions. Create a new user and log into that user's profile. Copy those .rc files to your user with the "messed up .rc file" and remember to set the permissions. Now log back into your old user. When you create a new user it copies the skeleton files to that user's new profile and they are generic.

Q: I want to install a desktop environment on my Ubuntu 18.04 server. Can you help me?

A: We can only try. You did not say what DE you would prefer, but it is all pretty standard. Bear in mind that these will be the vanilla versions of the desktops, here are a few:

```
sudo apt install xubuntu-desktop
```

or

```
sudo apt install lubuntu-desktop
```

or

```
sudo apt install kubuntu-desktop
```

or

```
sudo apt install ubuntu-gnome-desktop
```

Erik has been in IT for 30+ years. He has seen technology come and go. From repairing washing machine sized hard drives with multimeters and oscilloscopes, laying cable, to scaling 3G towers, he's done it.

Unvisible

Website: https://pyweek.org/e/Unvisible/
Author: ***Paul Paterson***
Price: free!

Motto: One room, one hit man, one target, one outcome?

A card and dice game where you must try to complete a series of hits without being detected by the police.

In this issue, I would like to introduce you to some of the fringe games out there that work well on Linux. I started looking into Python programs, to try and understand how one goes from knowing all the basic stuff, taking the next step, and making something useful, when I stumbled across this. This little python game is surprisingly fun, easy to figure out, and all the code is available for you to play with. Don't like the graphics? Change the .png files, it's that simple.

Simply download the zip file and extract it. It will extract to its own folder. Open a terminal in this folder and type: python run_game.py (Do not use python3 as it will not work.) Click on 'Rules' and read them. Very straightforward. Click back and "New Game" to start.

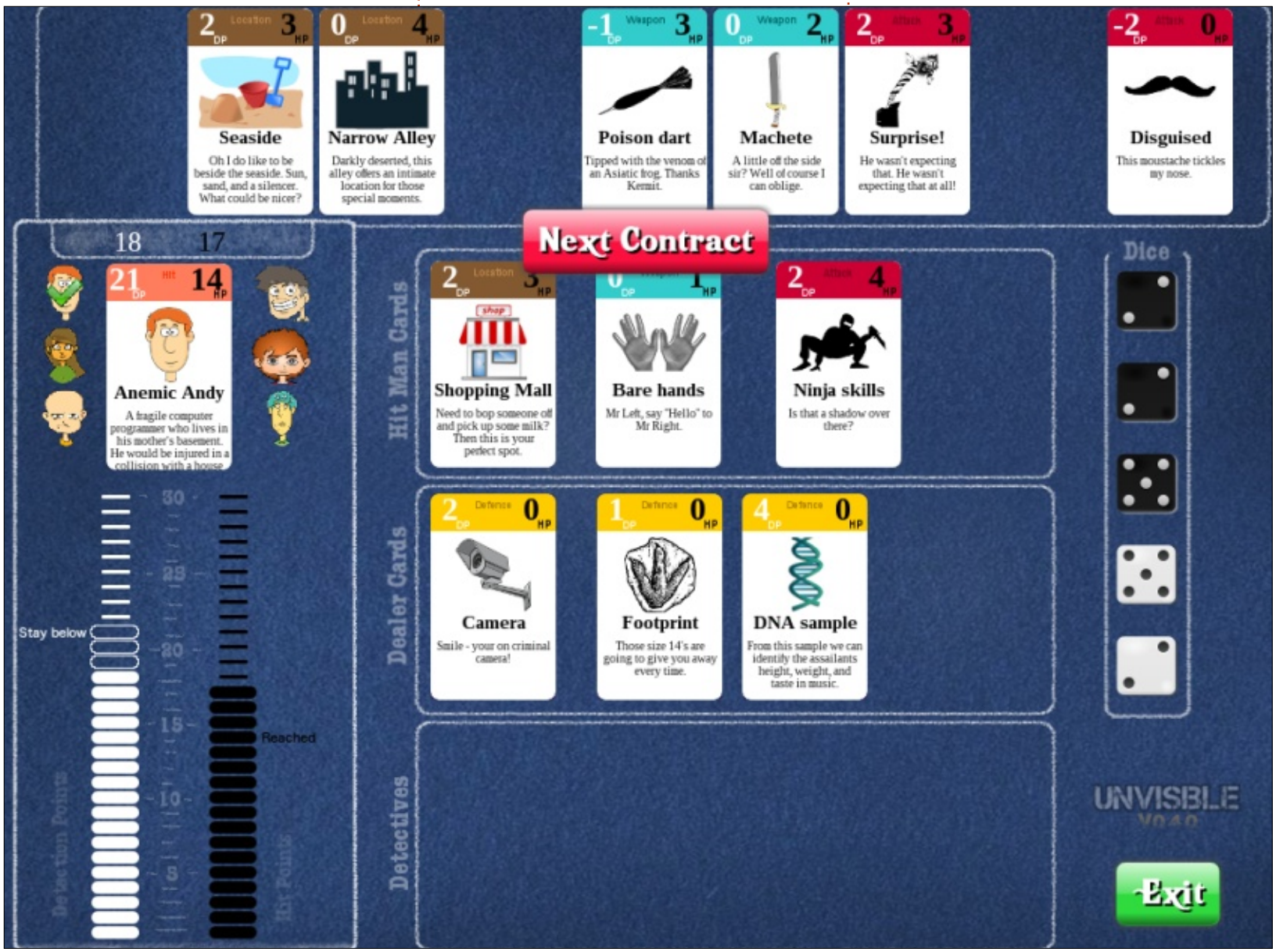
You have 7 people you need to kill, and you need to pick a place, a weapon, and an attack card. You

have the option of picking a second attack card, and the "target" gets defence cards. Then a roll of the dice decides their - and your - fate. Your Dice are black and the victim's dice are white. Succeed too many times and the Police get on your case, each policeman adds detection points. All the names are gag names, but beware when Liam Nooson gets on your case. He will find you and he will get you! (Unless you are extremely lucky.) Liam Nooson has 5 detection points, the highest of any detective.

In truth, there is nothing more satisfying than dropping a piano on a boat to kill 'Tungsten Tom' - the toughest character in the game with Miss Maple on your trail, and then getting away with it. With each level you finish (contract you kill, if you pardon my French) the game ramps up the difficulty, so much so that if you do manage to eliminate all the people on your contract list, you will end with: "well, I never thought anyone would get this far." Yes, I have mentioned the game is incomplete, but do not let this stop you!

This is not a game review, per se, rather an invitation, as the game will never be completed. Take a few minutes and play a game or two or ten, you will not regret it!

That said, why not complete the game and show off your python prowess?



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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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