



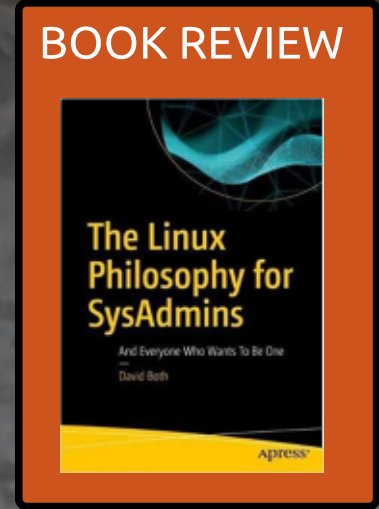
Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #139 - November 2018



Photo: Jens Eilers Bischoff
(Flickr.com)



GDPR

HOW SAFE IS THE DATA YOU HOLD?

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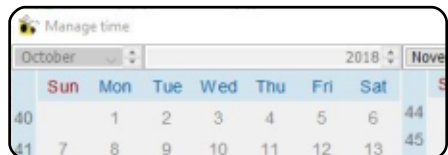


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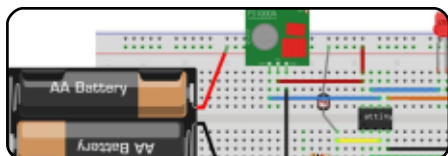
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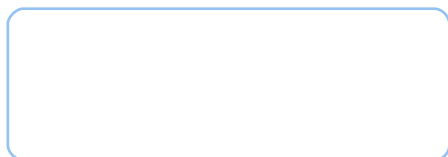
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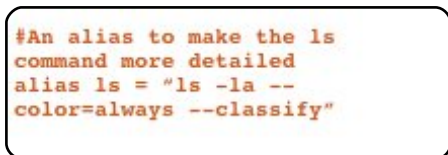


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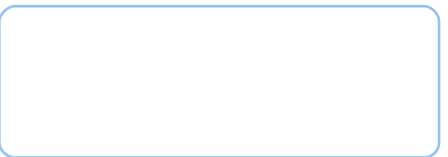
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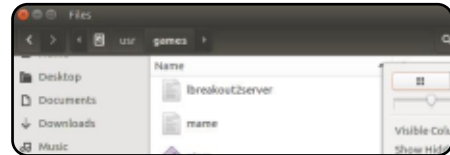
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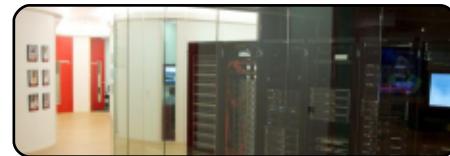
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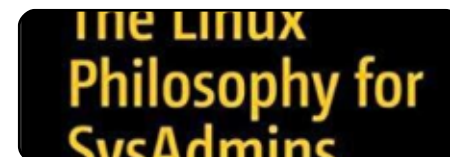
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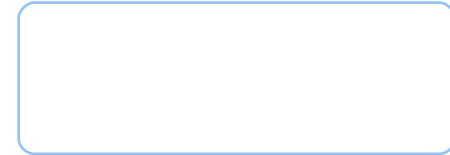
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WELCOME TO THE LATEST ISSUE OF FULL CIRCLE.

No Python again this month, but we still have Freeplane, Inkscape, and Great Cow Basic for you. In place of Python we have an article showing how to create an app with Applmage. Applmage basically means you make your app and it will run on pretty much any distro. Definitely a good thing.

Elsewhere this issue we have Everyday Ubuntu touching on more retro gaming, and the return of Linux Loopback which looks at Linux in ye olden days. As our cover shows, we have part one of a discussion on keeping your data safe in these days of GDPR and heavy fines for breaches.

Throughout this issue you'll no doubt come across a link here and there for DistroWatch.com. This is my thank you to them for now listing the magazine and the news podcast on their site. Every bit of publicity helps. The word on the street is that there are still people out there who've not heard of FCM.

Anyway, enough rambling. Enjoy the issue, and I'll see you next month.

All the best, and keep in touch!

Ronnie

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

FULL CIRCLE 2018 SURVEY

It's that time of the year again where we ask what you think of FCM, Ubuntu, and Linux.

Some questions are a requirement, some you can skip over if not applicable.

Your answers will help shape Full Circle, so please use your constructive criticism. If you don't tell us what you think, or what we're doing wrong, then we won't know.

Survey URL:
<http://bit.ly/fcm2018>

IBM BUYS LINUX & OPEN SOURCE SOFTWARE DISTRIBUTOR RED HAT FOR \$34 BILLION

IBM and Red Hat have announced an agreement that IBM has struck a deal to acquire the Linux and open source software distributor for \$34 billion in an all-cash transaction of \$190/share.

This announcement is the largest software company acquisition to date. Following the acquisition, Red Hat will continue to operate as a distinct unit in IBM's Hybrid Cloud team.

In the past years, Red Hat has been able to continuously generate profits by mastering its Linux and open source software distribution strategy. Since Linux is the preferred operating system when it comes to cloud computing, it makes sense for IBM to join hands with Red Hat and strengthen its enterprise offerings. It's worth noting that, on the other hand, IBM has been relying on heavily on its

Watson AI and its marketing gimmicks in the recent times.

Overall, this step is being seen as a move by IBM to establish itself as a bigger force in the hybrid cloud market. With this development, the IBM CEO Ginni Rometty hopes to make IBM the world's #1 hybrid cloud provider, offering the only open cloud solution with "full unlocked value."

While IBM's current position as a public cloud provider doesn't seem that impressive as compared to Amazon, Microsoft, and Google, the company plans to offer their combined technology to link their in-house cloud and other third-party cloud solutions.

Source:
<https://fossbytes.com/ibm-buys-red-hat-open-source-linux/>

TRIVIAL BUG IN X.ORG GIVES ROOT PERMISSION ON LINUX AND BSD SYSTEMS

An advisory on Thursday describes the problem as an "incorrect command-line parameter validation" that also allows an attacker to overwrite arbitrary files.

Privilege escalation can be accomplished via the `-modulepath` argument by setting an insecure path to modules loaded by the X.org server. Arbitrary file overwrite is possible through the `-logfile` argument, because of improper verification when parsing the option.

OpenBSD, the free and open-source operating system with a strong focus on security, uses xorg. On October 18, the project released version 6.4 of the OS, affected by CVE-2018-14665. This could have been avoided, though.

Theo de Raadt, founder and leader of the OpenBSD project,

says that X maintainer knew about the problem since at least October 11. For some reason, the OpenBSD developers received the message one hour before the public announcement this Thursday, a week after their new OS release.

"As yet we don't have answers about why our X maintainer (on the X security team) and his team provided information to other projects (some who don't even ship with this new X server) but chose to not give us a heads-up which could have saved all the new 6.4 users a lot of grief," Raadt says.

Had OpenBSD developers known about the bug before the release, they could have taken steps to mitigate the problem or delay the launch for a week or two.

To remedy the problem, the OpenBSD project provides a source code patch, which requires compiling and rebuilding the X server.

Source:

<https://www.bleepingcomputer.com/news/security/trivial-bug-in-xorg-gives-root-permission-on-linux-and-bsd-systems/>

OPEN SOURCE SOFTWARE: 20-PLUS YEARS OF INNOVATION

Open source led to a new software development and distribution model that offered an alternative to proprietary software. No single event takes the prize for starting the technology revolution. However, Feb. 3, 1998, is one of the more significant dates.

On that day, Christine Peterson, a futurist and lecturer in the field of nanotechnology, coined the "open source" term at a strategy session in Palo Alto, California, shortly after the release of the Netscape browser source code.

Later that month, Eric Raymond and Bruce Perens formed the Open Source Initiative, an educational and advocacy organization, to lobby for the open source label. Rapid adoption followed, with support from the Free Software Summit that April.

Numerous other events contributed to driving the movement. For instance, Red Hat

launched as a start-up in 1993, with the goal of developing its own Linux distribution for enterprise use.

Large enterprises, even self-declared enemies of FOSS in the past, now recognize that the power of the community and the transparent processes benefit end users and encourage innovation, noted Mehl.

The open source community has delivered tremendous results, observed Sheng Liang, CEO of Rancher Labs.

It has impacted the development of mature technologies, such as Linux, Java, Python and PHP, as well as more recent technologies, including cloud, containerization, blockchain and artificial intelligence, he told LinuxInsider.

The open source model allows global, direct contributions to advancements instead of siloed efforts within corporate boundaries, he told LinuxInsider.

Source:

<https://www.linuxinsider.com/story/Open-Source-Software-20-Plus-Years-of-Innovation-85646.html>

LINUX-FRIENDLY COMPANY SYSTEM76 SHARES MORE OPEN SOURCE THELIO COMPUTER DETAILS

System76 has been making big news in the Linux community lately with its upcoming open source Thelio computer. Many Linux users have been clamoring for System76 to make its own hardware, and that dream will soon be a reality.

Unfortunately, not much is known about Thelio hardware other than it is definitely a desktop computer that is built with open source ideology. Today, however, System76 shares new details and images about the computer with those that signed up for its email list. Probably the most exciting is the promise of an open source "daughter board" that will apparently strip the proprietary aspects from a typical motherboard.

"Creating an open desktop is a giant step for us, not only as a company, but as a team of Linux enthusiasts and contributors who are passionate about the future of open source. We hope that Thelio will open many new doors for people to build their own open hardware, develop their own utilities, and design a computer that reflects who they are," says System76.

The famed company further says, "We will be unveiling Thelio Systems on Thursday, November 1st. From there you'll be able to customize your own Thelio desktops for preorder. As our most faithful fans, you can enjoy some extra computer clues and a sneak peek at our manufacturing process leading up to the release. We're grateful for all of your passion and enthusiasm, and we can't wait to share this next phase of our journey with you."

Source:
<https://betanews.com/2018/10/26/system76-open-source-thelio-linux/>

FEDORA 29 RELEASED FOR BLEEDING-EDGE LINUX DESKTOP EXPERIENCE

Fedora is known to offer a bleeding edge Linux desktop experience; other distributions often employ many new technologies that are first implemented by Fedora. It's also known as RHEL's testing lab as Red Hat provides the newest features to Fedora users before shipping them in RHEL.

Following the same trend, the Red Hat-supported and community-driven Fedora has just received its latest update in the form of Fedora 29. The next week also marks 15 years since the initial release of Fedora Core 1, so it's kind of special.

What makes Fedora 29 more exciting is the fact that it's the first release to include Fedora Modularity feature on all different versions and spins. With Modularity, the developers can ship different versions of a package on the same base. You can choose a version of the software that matches your needs.

Another big change that'll surely be noticeable to users is GNOME 3.30 that comes with its own set of features and changes. It goes without saying that a large number of open source packages are now updated.

Fedora 29 also marks the first release of Silverblue variant. It's the new face of Fedora Atomic Workstation from Project Atomic. With the focus on container-based workflows, this Workstation version targets developers.

Source:
<https://fossbytes.com/fedora-29-released-features-download-linux/>

MANJARO 18.0 "ILLYRIA" RELEASED — GET THIS USER-FRIENDLY ARCH LINUX DISTRO HERE

After a series of release candidates pushed over the past weeks, the developers of Manjaro Linux have released the stable Manjaro 18.0 "Illyria."

As I've said on multiple occasions in the past, I love the

overall near-polished desktop experience offered by Manjaro. It goes without saying that it comes with tons of fixes spread all across the system as well as many minor improvements.

The users will now be able to take advantage of the new theme named Adapta-Maia and other minor visual changes across the system for better user experience.

Since Manjaro Xfce is the flagship edition, it continues to get the most attention. 18.0 "Illyria" ships with the latest Xfce 4.13 desktop environment.

With the new Display-Profiles feature, one can store more than one profiles for different monitors. So, if you switch displays often or connect external displays, this feature makes the transition seamless.

The KDE version comes with Plasma 5.14 desktop and latest KDE-Apps 18.08. It comes with a new Display Configuration tool that makes dealing with presentations easier.

If you're familiar with Manjaro, you must be knowing that it lets you easily install/remove different

Linux kernels. With the Manjaro Settings Manager, you can choose from 8 kernel-series — ranging from 3.16 to 4.19. This wide variety of kernel options ensures that one is able to run Manjaro on older as well as newer hardware.

Source:

<https://fossbytes.com/manjaro-linux-18-0-illyria-features-download/>

RED HAT ENTERPRISE LINUX 7.6 RELEASED WITH IMPROVED SECURITY FOR HYBRID CLOUDS

Designed and optimized for enterprise use, the Red Hat Enterprise Linux 7.6 operating system improves the overall security to meet today's standards in cloud environments by adding two new layers of security in an attempt to keep the information that's stored on disks more secure for hybrid cloud operations.

As such, with Red Hat Enterprise Linux 7.6, Red Hat introduces TPM (Trusted Platform Module) 2.0 hardware modules as

part of Network Bound Disk Encryption (NBDE), which provides enhanced security across networked environments and the ability to bind disks to specific physical systems on-premise.

Red Hat Enterprise Linux 7.6 also introduces support for Red Hat Enterprise Linux System Roles to help IT specialists remove the "human element of error" from complex tasks like remotely managing Red Hat Enterprise Linux deployments, allowing them to focus on adding business value to their enterprise.

Updated cryptographic algorithms for RSA (Rivest–Shamir–Adleman) and ECC (Elliptic-curve Cryptography) in Red Hat Enterprise Linux 7.6 help organizations better handle sensitive information, and the new enhancements implemented in the nftables utility makes it easier to manage firewalls in Red Hat Enterprise Linux powered machines.

Source:

<https://news.softpedia.com/news/red-hat-enterprise-linux-7-6-released-with-improved-security-for-hybrid-clouds-523537.shtml>

CANONICAL ADDS SPECTRE V4, SPECTRERSB FIXES TO NEW UBUNTU 18.04 LTS AZURE KERNEL

The new Azure kernel is available for Ubuntu 18.04 LTS (Bionic Beaver) and Ubuntu 16.04 LTS (Xenial Xerus) operating system series and addresses the side-channel attack discovered by Jann Horn and Ken Johnson, known as Spectre Variant 4 (CVE-2018-3639), which could allow a local attacker to expose sensitive information.

Also discovered by Jann Horn, the new Azure kernel fixes the original Spectre vulnerability (CVE-2017-5715) and a use-after-free vulnerability (CVE-2018-17182) found in the vmacache subsystem, which could let a local attacker crash the system or execute arbitrary code.

Running Ubuntu in the cloud as secure as possible is a top priority for Canonical, so the new kernel update also addresses a flaw (CVE-2018-15594) discovered in the paravirtualization implementation, which may reduce the effectiveness of the Spectre

Variant 2 mitigations for paravirtual guests, allowing local attackers to expose sensitive information.

Another side-channel attack was patched in this new Azure kernel for Ubuntu 18.04 LTS and Ubuntu 16.04 LTS, known as SpectreRSB (CVE-2018-15572), which could allow an attacker to expose sensitive information, as well as a stack-based buffer overflow (CVE-2018-14633) found in the iSCSI target implementation, which lets remote attackers crash the vulnerable machines.

Also patched are two flaws discovered in Linux kernel's IRDA implementation, a use-after-free vulnerability (CVE-2018-6555) that could allow a local attacker to either crash the system or execute arbitrary code, and a memory leak (CVE-2018-6554) that may let a local attacker cause a denial of service (kernel memory exhaustion).

Source:

<https://news.softpedia.com/news/canonical-adds-spectre-v4-spectrersb-fixes-to-new-ubuntu-18-04-lts-azure-kernel-523533.shtml>

WE (MAY) NOW KNOW THE REAL REASON FOR THAT IBM TAKEOVER. A DISTRACTION FOR RED HAT TO AXE KDE

While everyone was distracted by IBM's \$34bn takeover bid, Red Hat quietly wrote a death-note for KDE – within Red Hat Enterprise Linux (RHEL) to be precise.

On October 30, the Linux distro biz emitted Fedora 29 and RHEL 7.6, and in the latter's changelog the following appears, which a Reg reader kindly just alerted us to:

KDE Plasma Workspaces (KDE), which has been provided as an alternative to the default GNOME desktop environment has been deprecated. A future major release of Red Hat Enterprise Linux will no longer support using KDE instead of the default GNOME desktop environment.

In other words, if you're using RHEL on the desktop, at some point KDE will not be supported.

As our tipster remarked: "Red Hat has never exactly been a massive supporter of KDE, but at least they shipped it and supported you using it."

Hats off to our sharp-eyed vulture: Red Hat's long list of deprecated features isn't particularly user-friendly, because a great many deprecation announcements are carried over from previous releases.

Steve Almy, principal product manager of Red Hat Enterprise Linux, told El Reg in an email: "Based on trends in the Red Hat Enterprise Linux customer base, there is overwhelming interest in desktop technologies such as Gnome and Wayland, while interest in KDE has been waning in our installed base."

Source:

https://www.theregister.co.uk/2018/11/02/rhel_deprecates_kde/

FRESH LINUX MINT 19.1 ARRIVES THIS CHRISTMAS

According to the Linux Mint blog, all three editions of the

OS -- Xfce, Cinnamon and MATE -- will be available simultaneously, with upgrade paths open before the holiday season.

On the business front, the Linux Mint team announced it received more than \$9000 in donations for the month of October 2018, and they've also launched Patreon support in addition to PayPal.

Linux Mint 19.1 will feature several visual and workflow enhancements, including symbolic icons instead of the traditional monochrome ones, grouped windows and some subtle improvements to the Mint-Y theme's contrast.

The most notable visual improvement comes in the form of a larger and darker 40px panel for Cinnamon 4.0, with upgraded icons (something I've personally craved from the OS, especially on larger screens). Via the blog, Clement Lefebvre writes: "Each panel zone can now have a crisp icon size such as 16, 22, 24, 32, 48 or 64px or it can be made to scale either exactly (to fit the panel size) or optimally (to scale down to the largest crisp icon size which fits in the panel)."

Source:

<https://www.forbes.com/sites/jasonevangelho/2018/11/01/fresh-linux-mint-19-1-arrives-this-christmas/#6c64618d293d>

MICROSOFT WORKING ON PORTING SYSINTERNALS TO LINUX

A Microsoft exec has confirmed yesterday on Twitter that the company's engineers are working on porting the highly popular Sysinternals software package to Linux.

The revelation was made after another Microsoft employee announced hours before that the company had already ported the ProcDump application --that's part of the bigger Sysinternals collection-- to Linux.

Mario Hewardt, Principal Program Manager for Azure Diagnostics at Microsoft, later confirmed that Microsoft was also working on porting another Sysinternals utility named ProcMon to Linux as well.

According to Hewardt, these

ports are part of the company's larger plan to make the Sysinternals package available for Linux users in the coming future.

For readers who are not aware what Sysinternals is, this is a collection of free software utilities that were developed back in 1996 to help with Windows debugging. Microsoft acquired Wininternals, the company behind the tools, in 2006, but continued to develop the tools, which it has been making available on its TechNet portal ever since.

The Sysinternals collection currently includes tens of tools that can be used debugging CPU and memory performance, analyzing local processes, formatting hard drives, log analysis, network debugging, verifying file integrity, and many other more.

Currently, Sysinternals is without a doubt at the top of any system administrator's list of must-have tools. Besides sysadmins, the tools are also extremely popular with security researchers, who also use them to hunt malware.

Source:

<https://www.zdnet.com/article/microsoft-working-on-porting-sysinternals-to-linux/>

LINUS TORVALDS SAYS LINUX 5.0 COMES IN 2019, KICKS OFF DEVELOPMENT OF LINUX 4.20

Linus Torvalds is back from a short vacation to rethink his strategy as the leader of the development of the Linux kernel, and kicked off a new development cycle for the next 6 weeks, this time for Linux kernel 4.20.

That's right, Linux 4.20 is the next kernel coming after Linux 4.19, which was released by Greg Kroah-Hartman on October 22, 2018, not Linux 5.0 like many of you out there where hoping to see this year. Linus Torvalds decided it's best to end 2018 with Linux 4.20 and release Linux 5.0 in 2019.

"So I did debate calling it 5.0, but if we all help each other, I'm sure we can count to 20. It's a nice round number, and I didn't want to make a pattern of it. I think 5.0

happens next year, because then I "really" run out of fingers and toes," wrote Linus Torvalds in the mailing list announcement.

As the two-week merge window closes, the first Release Candidate (RC) of the Linux kernel 4.20 hits the streets to mark this series as ready for public testing. According to Linus Torvalds, Linux 4.20 had a "fairly big" merge window, but then again it was not a record breaker.

Linux kernel 4.20 RC1 consists of over 70 percent updated drivers, mostly for GPUs, updated architectures, including x86, ARM, AArch64, PowerPC, and the new C-SKY, networking improvements, header files, tooling and perf tooling updates, and core mm and kernel changes.

Source:

<https://news.softpedia.com/news/linus-torvalds-is-back-kicks-off-the-development-of-linux-kernel-4-20-523622.shtml>

HAPPY 15TH BIRTHDAY, FEDORA LINUX!

Fedora is the best desktop Linux distribution for many reasons. Not only is it fast and reliable, but it is constantly kept up to date with fairly bleeding edge packages. Not to mention, it uses the greatest desktop environment, GNOME, by default. Most importantly, it respects and follows open source ideology. It is a pure Linux and FOSS experience that is an absolute joy to use. It's no wonder Linus Torvalds -- the father of Linux -- chooses it.

With all of that said, Fedora didn't get great overnight. It took years of evolution to become the exceptional operating system it is now. In fact, today, we celebrate the Linux distribution's 15th birthday! Yes, it was way back in 2003 when Fedora Core 1 was released to the world, forever changing the course of history for the better.

Whether you are currently using the excellent Fedora 29 or some other distro like Ubuntu, Manjaro, or Arch, you absolutely owe Fedora a debt of gratitude for all it has

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Survey URL:
<http://bit.ly/fcm2018>

contributed to both the Linux and open source communities over the years. As the distribution enters a new chapter following the Red Hat acquisition by IBM, I hope and pray for another 15 years. Happy Birthday, Fedora!

Source:
<https://betanews.com/2018/11/06/happy-birthday-fedora-linux/>

SECURITY RESEARCHER DROPS VIRTUALBOX GUEST-TO-HOST ESCAPE ZERO-DAY ON GITHUB

Exploit developer and vulnerability researcher Sergey Zelenyuk decided to publicly disclose a Virtualbox zero-day vulnerability and the exploit that goes with it because of disagreeing with the current state of bug bounty programs and security research.

As detailed in his GitHub-based disclosure, the security issue chains multiple bugs and it affects all VirtualBox virtual machines with the requirement of them using the default configuration that sets the

network card to Intel PRO/1000 MT Desktop (82540EM) and the networking mode to NAT.

Moreover, the zero-day also affects all possible combinations of guest or host operating systems running inside the targeted virtual machines.

Following successful exploitation of the zero-day Virtualbox vulnerability, attackers can gain elevated privileges on the target system allowing for an escape from the guest operating system running in the virtual machine to the host OS.

According to the security researcher, the exploit he describes in detail in his write-up is 100% reliable and "it either works always or never because of mismatched binaries or other, more subtle reasons I didn't account."

Zelenyuk started his write-up by detailing the reasons behind the public disclosure of the vulnerability and exploit, with a previously discovered Virtualbox security issue he disclosed to Oracle and was fixed in 15 months probably being the catalyst behind his decision.

Source:

<https://news.softpedia.com/news/security-researcher-drops-virtualbox-guest-to-host-escape-zero-day-on-github-523660.shtml>

ORACLE UPDATES ITS LINUX DISTRO WITH RED HAT ENTERPRISE LINUX 7.6 COMPATIBILITY

Derived from the sources of Red Hat Enterprise Linux 7.6, the Oracle Enterprise Linux 7 Update 6 release ships with Oracle's Unbreakable Enterprise Kernel (UEK) Release 5 version 4.14.35-1818.3.3 for both 64-bit (x86_64) and ARM architectures, and the Red Hat Compatible Kernel 3.10.0-957, which is only available for 64-bit systems.

Besides updated kernels, the Oracle Enterprise Linux 7 Update 6 release comes with numerous new features and improvements, including support for managing path, mount, and timer systemd unit files in the Pacemaker component, as well as the ability to track package installations and upgrades using audit events.

This release also adds support for encrypting keys in a Trusted Platform Module 2.0 (TPM2) chip to the Clevis automated encryption framework, a feature that's only available for 64-bit systems, support for block and object storage layouts in parallel NFS (pNFS), and multi-queue I/O scheduling for SCSI (scsi-mq).

A Technical Preview (TP) of DAX (Direct Access) for EXT4 and XFS file systems is also available in Oracle Enterprise Linux 7 Update 6 to enable direct persistent memory mapping from an application. For AArch64 (ARM64) systems, this release enables DTrace and ports the DTrace code in the Unbreakable Enterprise Kernel Release 5 repo.

Source:

<https://news.softpedia.com/news/oracle-updates-its-linux-distro-with-red-hat-enterprise-linux-7-6-compatibility-523682.shtml>

THE CEPH STORAGE PROJECT GETS A DEDICATED OPEN-SOURCE FOUNDATION

Ceph is an open source technology for distributed storage that gets very little public attention but that provides the underlying storage services for many of the world's largest container and OpenStack deployments. It's used by financial institutions like Bloomberg and Fidelity, cloud service providers like Rackspace and Linode, telcos like Deutsche Telekom, car manufacturers like BMW and software firms like SAP and Salesforce.

These days, you can't have a successful open source project without setting up a foundation that manages the many diverging interests of the community and so it's maybe no surprise that Ceph is now getting its own foundation. Like so many other projects, the Ceph Foundation will be hosted by the Linux Foundation.

Given its broad adoption, it's also no surprise that there's a wide-ranging list of founding members. These include Amihan Global, Canonical, CERN, China Mobile, Digital Ocean, Intel, ProphetStor Data Service, OVH Hosting Red Hat, SoftIron, SUSE,

Western Digital, XSKY Data Technology and ZTE. It's worth noting that many of these founding members were already part of the slightly less formal Ceph Community Advisory Board.

Source:

<https://techcrunch.com/2018/11/12/the-ceph-storage-project-gets-a-dedicated-open-source-foundation/?guccounter=1>

DEBIAN GNU/LINUX 9.6 "STRETCH" RELEASED WITH HUNDREDS OF UPDATES

The Debian Project announced the general availability of the sixth point release to the latest stable Debian GNU/Linux 9 "Stretch" operating system series.

Debian GNU/Linux 9.6 "Stretch" is here about four months after the 9.5 point release to offer users up-to-date installation and live mediums if they want to deploy the Linux-based operating system on new computers or want to reinstall without having to download hundreds of updates from the official software repositories. This release includes

more than 270 updated packages.

With the availability of the Debian GNU/Linux 9.6 "Stretch" point release, the Debian Project prepared updated installation and live images that you can download right now with the Xfce, Cinnamon, GNOME, KDE, MATE, and LXDE desktop environments from the official mirrors or via our Linux software portal if you want to deploy Debian Stretch on new computers.

Source:

<https://news.softpedia.com/news/debian-gnu-linux-9-6-stretch-released-with-hundreds-of-updates-download-now-523739.shtml>

UBUNTU FOUNDER MARK SHUTTLEWORTH HAS NO PLANS OF SELLING CANONICAL

A couple of weeks ago IBM announced its plan to buy Red Hat for \$34 billion. Following that, experts started speculating that rival companies like Canonical and Suse would sell as well.

However, Canonical's founder, Mark Shuttleworth, doesn't seem to have any plans of selling the company — at least not in the near future. One of the reasons behind this decision is that he doesn't really need the money. But another big reason for not selling is his vision for Canonical and Ubuntu, which he would like to see through personally.

There was a time when Shuttleworth sold his company Thawte Consulting to Verisign for a whopping \$575 million nearly two decades ago. But it's clear that he has no intention of doing that again when it comes to Canonical.

Even though Shuttleworth doesn't think that selling the company is necessary at this point, a takeover could surely ensure better monetary reward for Canonical's employees.

However, he admits that the only situation where he would agree to sell the company is one which "accelerate(s) his vision for Canonical." It is well known that the CEO aims to take Canonical to IPO, but they need to hit the right numbers to make it possible.

Source:

<https://fossbytes.com/ubuntu-founder-mark-shuttleworth-has-no-plans-of-selling-canonical/>

MARK SHUTTLEWORTH REVEALS UBUNTU 18.04 WILL GET A 10-YEAR SUPPORT LIFESPAN

At OpenStack Summit in Berlin, Canonical and Ubuntu founder Mark Shuttleworth said in a keynote that Ubuntu 18.04 Long Term Support (LTS) support lifespan would be extended from five years to 10 years.

Ubuntu 18.04 released in April 2018. While the Ubuntu desktop gets most of the ink, most of Canonical's dollars comes from server and cloud customers. It's for these corporate users Canonical first extended Ubuntu 12.04 security support, then Ubuntu 14.04's support, and now, preemptively, Ubuntu 18.04. In an interview after the keynote, Shuttleworth said Ubuntu 16.04, which is scheduled to reach its end of life in April 2021, will also be given a longer support life span.

When it comes to OpenStack, Shuttleworth promised again to support versions of OpenStack dating back to 2014's IceHouse. Shuttleworth said, "What matters isn't day two, what matters is day 1,500."

He also doubled-down on Canonical's promise to easily enable OpenStack customers to migrate from one version of OpenStack to another. Generally speaking, upgrading from one version of OpenStack is like a root canal: Long and painful but necessary.

Source:

<https://www.zdnet.com/article/mark-shuttleworth-reveals-ubuntu-18-04-will-get-a-10-year-support-lifespan/>

FIREFOX WILL NOW SHOW YOU DATA BREACH ALERT IF YOU VISIT HACKED SITES

Mozilla has announced a new security feature in its Firefox Quantum web browser to alert users when they visit a website that was recently reported in a

data breach.

So if you happen to stumble upon a website that was breached in the past 12 months, Firefox will send you a handy little notification.

But Mozilla knows better than to throw too many notifications at you, so they have promised that the alerts will "appear at most once per site."

After sending you the first notification, Firefox will repeat such an alert only if you visit a site that was breached within the past two months and added to the database of breached sites.

But again, if you really don't care about data breaches and hate notifications, Mozilla will let you opt out of it.

Mozilla explained in its blog that it fetches the list of hacked sites from its partner, Have I Been Pwned (HIBP) — which was integrated with Firefox earlier this year.

The new breach-alert feature is actually part of Mozilla's existing Firefox Monitor service which notifies users if their email ID was

present on the list of hacked databases.

Apart from these notifications, which will be rolled out to users in the next few weeks, Mozilla is also going to rollout Firefox Monitor in 26 languages.

Source:

<https://fossbytes.com/firefox-will-now-show-you-data-breach-alert-if-you-visit-hacked-sites/>

UBER JOINS LINUX FOUNDATION AS A GOLD MEMBER

The Linux Foundation has announced that Uber is the newest Gold member to join the non-profit organization. Uber made the announcement at the 2018 Uber Open Summit committing to use and contribution to open-source tools.

Uber's CTO, Thuan Pham said, "We are honored to join the Linux Foundation to foster greater collaboration with the open source community."

Uber is now a member of Linux

Foundation's TODO Group as well — an open group of companies that collaborate on various tools and practices to run successful and useful open source projects and programs.

Uber has actively contributed to open source domain for years by creating popular projects like "Jaeger and Horovod that help businesses build technology at scale."

According to the data provided by Uber, it has already worked on as many as 320 open-source projects and repositories from 1,500 contributors which involve over 70,000 commits.

Given that Uber has been using open source in its core tools for so many years, we wonder why it took so long to join the foundation.

But now that Uber is here, it will be joining the league of Gold members that have more than 1,000 organizations as members. It includes famous names such as Facebook, Dell EMC, Accenture, Alibaba Cloud, Baidu, Toshiba, Toyota, Juniper Networks, Oath, Panasonic, etc.

The Linux Foundation offers three membership tiers, namely, Platinum, Gold, and Silver. As a Gold member, Uber will contribute \$100,000 each year to the foundation.

Jim Zemlin, The Linux Foundation's Executive Director, says that Uber's "expertise will be instrumental" for open source projects. It will help in the advancement of "cloud native technologies, deep learning, data visualization and other technologies that are critical to businesses today."

Source:

<https://fossbytes.com/uber-joins-linux-foundation-as-a-gold-member/>

ALMOST A QUARTER OF REPORTED VULNERABILITIES HAVE NO KNOWN SOLUTION

The number of reported vulnerabilities in 2018 is seven percent down on the same period last year, according to a new report from Risk Based Security.

It's not all good news though,

as 24.9 percent of 2018's reported vulnerabilities currently have no known solution which is a reminder that, while patching is very important, it can't be relied on exclusively as a remedy.

Vulnerabilities with a CVSSv2 score of 9.0+, often referred to as 'critical', accounted for 15.4 percent of all published vulnerabilities through the third quarter. Also, Risk Based Security's own VulnDB published 4,823 more vulnerabilities than CVE/NVD through the end of Q3 2018.

Of all the vulnerabilities disclosed through Q3 2018, 67.3 percent are due to insufficient or improper input validation. Though many vulnerabilities fall under this umbrella, it's clear that vendors are still struggling to carefully validate input from users. Having a mature software development lifecycle and some form of auditing can help iron out many of these issues and significantly reduce the threat from attackers.

Source:

<https://betanews.com/2018/11/19/vulnerabilities-no-solution/>

RED HAT ENTERPRISE LINUX 8 ENTERS BETA WITH HARDENED CODE AND SECURITY FIXES

Red Hat Enterprise Linux 8 is the next major step in the evolution of Red Hat's Linux-based, enterprise-ready operating system, promising lots of new features and numerous improvements, along with much-needed hardened code and security fixes to make RHEL more stable, reliable, and supported across all infrastructures.

Major highlights of the Red Hat Enterprise Linux 8 release include a new concept for delivering userspace packages with greater flexibility and more easily, called Application Streams. Red Hat says application streams won't impact the underlying stability of the operating system, nor specific, user-customized deployments.

Red Hat Enterprise Linux 8 will also introduce more efficient Linux networking for containers via IPVLAN interfaces, a brand new TCP/IP stack that features bandwidth and round-trip

propagation time (BBR) congestion control, along with support for the latest OpenSSL 1.1.1 and TLS 1.3 security protocols.

Talking about security, Red Hat Enterprise Linux 8 promises to make managing cryptographic compliance easier from a single prompt thanks to the implementation of system-wide cryptographic policies. Moreover, it will support LUKSv2, which, in combination with Network-Bound Disk Encryption (NBDE), will offer more robust data security.

Other noteworthy features coming to Red Hat Enterprise Linux 8 are an all-new volume-managing file system called Stratis, which can be used for more sophisticated data management, file system snapshots, the next generation Yum 4 package manager, better support for Linux containers, and a single, consistent user control panel.

Source: <https://news.softpedia.com/news/red-hat-enterprise-linux-8-enters-beta-with-hardened-code-and-security-fixes-523859.shtml>

LINUS TORVALDS: AFTER BIG LINUX PERFORMANCE HIT, SPECTRE V2 PATCH NEEDS CURBS

Major slowdowns caused by the new Linux 4.20 kernel have been traced to a mitigation for Spectre variant 2 that Linux founder Linus Torvalds now wants restricted.

As noted by Linux news site Phoronix, the sudden slowdowns have been caused by a newly implemented mitigation called Single Thread Indirect Branch Predictors (STIBP), which is on by default in the Linux 4.20 kernel for Intel systems with up-to-date microcode.

STIBP is one of three possible mitigations Intel added to its firmware updates in response to the Spectre v2 attacks. Others included Indirect Branch Restricted Speculation (IBRS), and Indirect Branch Predictor Barrier (IBPB), which could be enabled by operating-system makers.

STIBP specifically addresses attacks against Intel CPUs that

have enabled Hyper Threading, its version of Simultaneous Multithreading (SMT)

Phoronix's benchmarks comparing Linux 4.20 with STIBP enabled show that the mitigation on some application workloads has a severe impact on performance.

With STIBP enabled, Phoronix's high-end Xeon Gold server also goes from being the fastest server to slower than AMD's previously lower-performing EPYC-based server.

Because of these slowdowns Torvalds' on Sunday posted a message demanding STIBP no longer be enabled by default in the kernel, especially since an existing option is to disable SMT.

Source: <https://www.zdnet.com/article/linus-torvalds-after-big-linux-performance-hit-spectre-v2-patch-needs-curbs/>

RED HAT EXEC SAYS IBM MUST KEEP THE OPEN-SOURCE CULTURE UNTOUCHED

Speaking at the Red Hat Forum 2018 in Sydney, Bill-Peter explained that the acquisition “shocked” the company’s employees, suggesting that this takeover should take place smoothly in order to leave the open-source culture untouched.

Otherwise, Red Hat’s mission would be altered and this could eventually lead to en-masse departures from the company.

“At Red Hat we have like 13,000 people. If the open source culture gets impacted, trust me, many of those 13,000 people will leave,” he was quoted as saying.

“For me being in engineering, different things are more important. It’s commitment to open source. Because we truly believe that open source and the open source way leads to better products, better innovation.”

Bill-Peter went on to state that

it’s critical for HP to allow Red Hat to operate independently, and while the new leadership could dictate the new direction of the company, it shouldn’t be substantially different from where it’s heading to today.

While IBM hasn’t yet outlined its plans for Red Hat, Jim Whitehurst, Red Hat’s CEO, said in a statement announcing the takeover in late October that IBM could help the company “accelerate the impact of open source” given its resources.

Red Hat has long been a target for tech giants, and while the IBM takeover took many by surprise, people familiar with the matter revealed many years ago that talks over a potential acquisition involved several other companies, including software firm Microsoft and Google.

Source: <https://news.softpedia.com/news/red-hat-exec-says-ibm-must-keep-the-open-source-culture-untouched-523900.shtml>

REACTOS, THE OPEN SOURCE WINDOWS CLONE, CAN NOW BOOT FROM BTRFS DRIVES

Like every other new ReactOS release, version 0.4.10 introduces something new for users to try out on their personal computers and keep them busy until the next release lands. Without any further ado, the biggest new feature in ReactOS 0.4.10 is the ability of the operating system to boot from Btrfs formatted drives.

This major change allowing users to install and boot ReactOS from a disk drive formatted with the Btrfs file system was possible thanks to an implementation of the WinBtrfs Windows driver for the next-generation file system for Linux-based operating systems based on the copy-on-write (COW) principle.

Apart from the WinBtrfs implementation, the ReactOS 0.4.10 release adds improvements to the graphical shell’s functionality like the interaction with multiple windowed

applications, the overall look and feel of the operating system, especially the MSI installers, as well as file copying and shortcut creation functionality.

The overall stability of ReactOS has been improved as well in this release, meaning that the operating system and apps should crash less, resulting in fewer BSODs and a much smoother performance. ReactOS 0.4.10 also brings more detailed BIOS information to the ReactX Diagnostic Tool (dxdiag).

Source: <https://news.softpedia.com/news/reactos-the-open-source-windows-clone-can-now-boot-from-btrfs-drives-523926.shtml>

FLATPAK LINUX APP SANDBOXING FORMAT NOW LETS YOU KILL RUNNING FLATPAK INSTANCES

Flatpak 1.1.0 is now available as the first snapshot to kick off the development of the Flatpak 1.2 series, which is expected to

arrive by the end of the year, promising new features and improvements to make your Flatpak experience better from all angles when you want to deploy apps across multiple Linux-based operating systems.

In this development release, the development team implemented a new "flatpak kill" command to finally let users kill running Flatpak instances, and made the --remote argument optional in the "flatpak install" command for interactive installs, prompting users to choose a remote location to install the app.

Furthermore, Flatpak 1.1.0 adds support for the --columns option to all commands printing tables in an attempt to allow users to specify what exactly to output, support for --commits argument to

the "flatpak repo" command to list commits in a branch, along with support for --info argument to show information about a Flatpak repository.

Other noteworthy changes implemented in the Flatpak 1.1.0 release include the ability of the framework to log transactions to the systemd journal if it's built against the libsystemd library, support for the "flatpak remote-ls" command to show the runtime used for each app, and better error output.

The "flatpak list" command has been updated as well to support filtering by runtime, and the "flatpak uninstall" command now supports --delete-data argument to allow users to delete the application data directory in their Home folder. If no application is

specified, the data from all uninstalled apps will be removed.

Source:

<https://news.softpedia.com/news/flatpak-linux-app-sandboxing-format-now-lets-you-kill-running-flatpak-instances-523928.shtml>



DistroWatch.com

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



I've recently begun using GatsbyJS (a static site/progressive web app generator) for a few of my side projects. Prior to this, I hadn't used JavaScript outside of some basic web functionality and a demo of NodeJS. Even then, I typically stuck with the vanilla syntax. The more I write React code, the more I stumble upon examples and documentation using arrow functions, let and const, and other features available through ES6. Since I've had to buckle down and try to learn as much as possible about ES6, I wanted to share it with anyone else who (like me) may not have needed to learn it just yet.

WHAT IS ECMAScript?

It's essentially a series of enhancements to traditional ("vanilla") JavaScript. It's intended to update faster and offer more quality-of-life features than normal JS.

NEW FEATURES

ES6 brought with it a large number of changes.

Let/Const

In normal JS you would typically declare a var and leave it at that. ES6 offers some new options - let and const.

'let' defines a locally scoped variable that you can re-assign, but not redeclare. So if you want to make a counter that is run through a loop, 'let' would be what you want.

'const' defines a locally scoped variable that cannot be changed once declared (it's a constant variable, in other words). So if you want to scale various values by the same amount without the chance of it changing, use a const for the scaling value.

Spread

Have you ever had an array that you want to dump to the console,

```
const fruits = ["apple", "pear", "orange"];
const vegetables = ["leek", "onion"];

const both = [...fruits, ...vegetables];
console.log(both)
```

or otherwise just turn into separate elements? Spread does exactly that. It even lets you combine two arrays with minimal fuss.

The above will output an array with all the elements combined together. If you were to run console.log(...fruits), it would also just spit out the 3 separate string objects without formatting it as an array.

Template Literals

Previously, if you wanted to join strings together, you had to use a + operator. Now, ES6 will let you call them within a string using backticks and \${} variables.

```
let welcome = `Hello
${username}, last logged in:
${lastLogin}`
```

Arrow Functions

ES6 also introduced arrow functions - these are essentially the same as regular functions, except the syntax is different. The upside to the syntax changes are that the whole declaration is shorter and easier to read.

Vanilla JS:

```
function (num1, num2) {
  return num1 + num2
}
```

ES6:

```
(num1, num2) => return num1 + num2
```

If you have more than one line in the body of the function, you will need to wrap the body in curly braces. See the next section for an example.

```
const sub = (num1 = 1, num2 = 4) => {
  if ( num1 > num2 ) {
    return num1 - num2
  } else {
    return num2 - num1
  }
}
```

```
console.log(sub()) // returns 3
console.log(sub(3,2)) // returns 1
```

Default Function Parameters

As surprising as it may seem, vanilla JS doesn't let you define default values to your function parameters (see above).

Extract Data from Arrays and Objects

ES6 also simplified pulling data from objects and arrays (shown below).

CONCLUSION/HOMEWORK

```
const years = [2007,2008,2009]
const [year1, year2, year3] = years
console.log(year1,year2,year3) // outputs 2007 2008 2009
```

```
const user = {
  name: 'username',
  rights: 'admin',
  age: 170
};
```

```
const {name, rights, age} = user
console.log(name, rights, age) // outputs username admin 170
```

There are a lot of other things ES6 allows you to do - such as defining objects faster, classes, and many others. So far, the items listed above are the ones I have most commonly used and seen in documentation. As a bit of homework - see if you can figure out the new shortened syntax for object literals in ES6.

Do you think I missed an important feature? Then please let me know via email at lswest34+fc@gmail.com. Similarly, anyone who has requests

for articles or corrections to past ones should let me know at the address listed above.

FURTHER READING

<https://babeljs.io/docs/en/learn/> - Babel documentation on ES6

<https://codeburst.io/es6-tutorial-for-beginners-5f3c4e7960be> - Tutorial on some common features of ES6

<https://es6console.com> - Online console where you can try out ES6 yourself.



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.



Recently, an article on the OMGUbuntu! website (<https://www.omgubuntu.co.uk/2018/02/next-gen-kdenlive-beta-available-testing>) lead me to test the newest version of the Kdenlive video editor. What intrigued me was not the application itself - which does work quite well, though with some rough edges as can be expected in a beta version - but the mode of delivery and installation: an AppImage file.

This portable format for GNU/Linux applications is promoted as a simpler way of distributing applications to end-users. A program in the AppImage format should:

- Run as-is on any GNU/Linux platform, as long as the distribution supports it. Most major modern distributions do so.
- Be installable by an end-user, without any need to invoke administrative privileges.
- Be downloadable directly from any web server, without needing to configure repositories or a PPA systemwide.

This is, precisely, what happened with the Kdenlive application. Installing it was simply a question of downloading the file to my desktop. It came in the form of a compressed file system with all necessary dependencies included. I then needed to change access permissions to make the file executable, and could then run it directly without dealing with any complex installation procedures.

This got me to thinking about application creation. Many developers need to distribute applications to a reduced subset of users, for instance when a business program is written in-house and not shared outside of the company or organization. It may also be of interest to people who are yet in an early stage of application development, or in situations where several concurrent versions of an application need to coexist. This was precisely my personal use-case for Kdenlive: I wished to try out the newer version, but without uninstalling or affecting in any way, my existing version (that came from the Ubuntu repositories).

Other projects are expressing interest in this technique, such as LibreOffice which has released an AppImage version of LibreOffice 6 that can easily be installed and run alongside an existing 5 series.

In a sense, the AppImage file format and distribution mechanism mimic that of Apple's Mac OS and the .DMG files often used therein. One of that system's strong points is, precisely, ease of use.

To create an AppImage application, as far as I could see, just about any programming language available on a GNU/Linux system could conceivably be used, whether compiled or interpreted. Even an existing application in binary form - of which the source code may not be easily found or modified - could be repackaged as an AppImage file. One just needs the appropriate software to convert the application into the necessary file format. Obtaining this software is really easy. One just needs to follow the instructions in the README file in the project's GitHub page, at:

<https://github.com/AppImage/AppImageKit/blob/appimagetool/master/README.md>. It is quite apt that the AppImage software is distributed as an AppImage file. Of course it is! At the time of writing, the steps are as follows. Start by downloading the software:

```
$ wget  
"https://github.com/AppImage/  
AppImageKit/releases/download  
/continuous/appimagetool-  
x86_64.AppImage"
```

Now make this file executable:

```
$ chmod 755 appimagetool-  
x86_64.AppImage
```

And it can be executed directly:

```
$ ./appimagetool-  
x86_64.AppImage --version
```

```
appimagetool, continuous  
build (commit continuous-2-  
g09dfd37), build 1460 built  
on 2018-02-17 22:55:22 UTC
```

To create a sample application, I started out by creating a directory tree, and populating it with my files. This directory structure seems to have been heavily

HOWTO - CREATE PORTABLE APPS WITH APPIMAGE

inspired by the ROX file and desktop managers.

```
$ mkdir HelloWorld.AppDir
$ cp terminal.png
  HelloWorld.AppDir/helloworld.
  png
$ editor
  HelloWorld.AppDir/AppRun
$ editor
  HelloWorld.AppDir/helloworld.
  desktop
```

At least three of these files are required. The PNG image file will be the application icon. In this case, I simply repurposed a spurious image file that was lying around on my computer. The Desktop file needs some care, since it gives the system metadata about the application. For this example, I included the following code:

```
[Desktop Entry]
Version=1.0
Type=Application
Name=HelloWorld
TryExec=helloworld
Exec=helloworld %F
Icon=helloworld
```

Finally, the AppRun file should be made executable. This is a boot script that will be used whenever the user executes the AppImage file, to launch the actual

application. For this example, I wrote a very simple shell script:

```
#!/bin/bash
echo "Hello, world!"
```

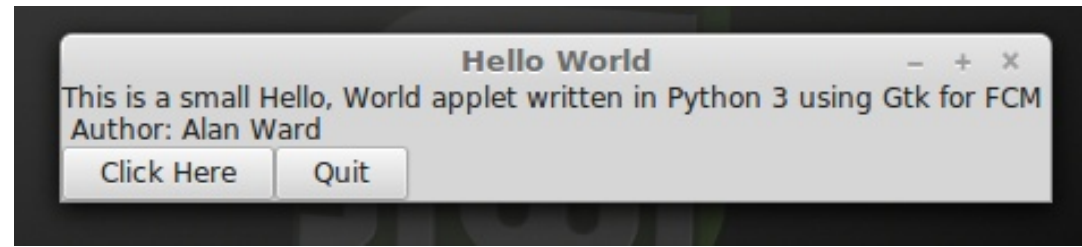
I could then create the AppImage files for either my default 64-bit architecture, or for 32-bit. Unfortunately, the current version of appimagetool is still a bit lacking in features, and cross-compiling is not supported, e.g. of a 32-bit application on a 64-bit computer. You will need to prepare the AppImage file for each architecture on a platform with that architecture. So, either:

```
$ export ARCH=x86_64 ;
./appimagetool-
x86_64.AppImage
HelloWorld.AppDir
```

or:

```
$ export ARCH=i386 ;
./appimagetool-
x86_64.AppImage
HelloWorld.AppDir
```

Regarding system compatibility, as-is natural AppImage applications compiled for 32-bit architectures will run both on 32-bit systems compiled for an i386 (or today, rather, an i686), and on



64-bit systems compiled for the amd64 architecture:

```
$ ./HelloWorld-i386.AppImage
Hello, world!
$ ./HelloWorld-
x86_64.AppImage
Hello, world!
```

A more complex example could involve, for instance, a graphical application written in Python. One easy way of launching the application would be to simply replace the AppRun script file with our Python app, beginning with the correct invocation header. For instance, if using Python version 3 and the Gtk libraries, this could become:

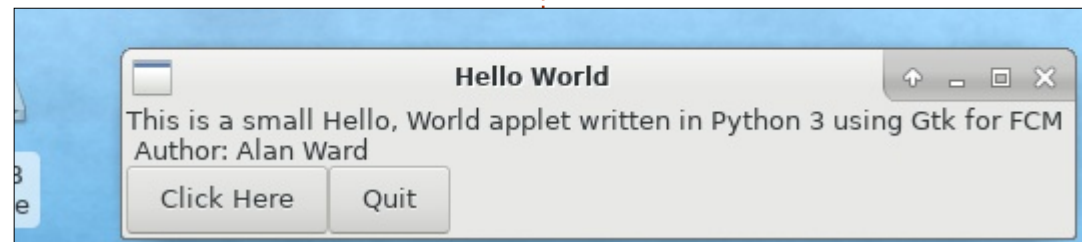
```
#!/usr/bin/python3
```

```
import gi
gi.require_version('Gtk',
'3.0')
from gi.repository import Gtk
class MyWindow(Gtk.Window):
...
```

I built a very simple application, packaged it as a 64-bit AppImage file, and then ran it under Linux Mint 18.3 (above).

I then repackaged the very same AppImage for a 32-bit system, downloaded and executed it from a Fedora 26 Live CD. The conversion to AppImage was actually done from within the Fedora VirtualBox instance itself (below).

This very same AppImage also worked straight away on a rather old version of Elementary OS

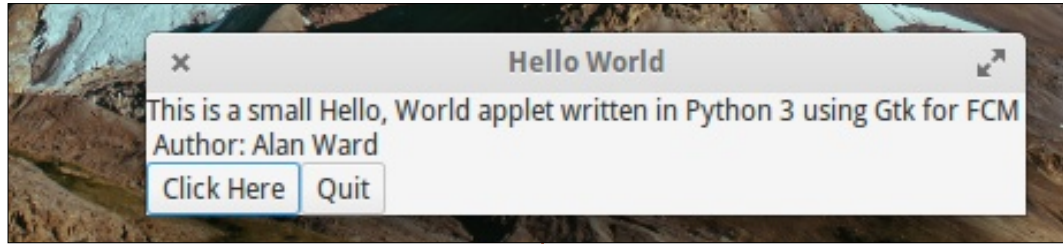


HOWTO - CREATE PORTABLE APPS WITH APPIIMAGE

(Freya, built upon Ubuntu Trusty and shown right).

Naturally, using such a technical solution requires that both Python 3 and Gtk are installed on the user's system. This is not much of a problem since this would be the case on most if not all current GNU/Linux systems. If it is not so, they must be bundled within the AppImage file itself. This would naturally become rather larger than if containing a simple python script, but it is doable when the software available on the target system is an unknown quantity.

It can be noted that the two examples presented above both rely on interpreted scripts, and can thus be run on any hardware platform as long as the corresponding interpreters are present. Applications written in compiled languages are also possible, though they do rely more on the hardware platform. Applications compiled for 64-bit platforms are restricted to just that architecture. This should not be a problem in this day and age when most computers are 64-bit machines, but do bear this in mind if running a mix of platforms. Naturally, this remark is even more



pertinent when working with ARM-based computers (such as the Raspberry Pi) and tablets, a domain in which 32-bit platforms are the most common.

As for GNU/Linux distributions, not all are equally compatible. I have had excellent results with fairly current versions of the Debian / Ubuntu / Linux Mint / Neon constellation. The same has also been true for recent versions of Fedora. Your mileage may vary on other distributions.

After this short foray into using AppImage applications and creating a few small tests, there are a few very clear advantages over the more usual repository-based options for distributing software, and package managers. It is very easy for the end user to deal with the process of installing an application, at least into his or her own file space. Several different versions of the program can be installed at the same time,

which helps for testing and upgrade procedures. These advantages from the user's point of view can also be seen as positive from the system administrator's standpoint: users can be more independent for many simple tasks. On the other hand, it should also be stressed that one advantage of a more centralized repository based distribution mechanism, and one that requires root access to the system, is security. Applications that are distributed in AppImage form require the user to be proactive as to making sure of the origin of these programs, as in asking him, or herself, if that origin is actually trustworthy. I think it is fair to say that some of the mess in the Windows and Android worlds is due, precisely, to the ease with which end users can install just about any application without even thinking in terms of software authenticity. Even though AppImages cannot be installed outside a GNU/Linux system user's

home directly without having administrator privileges, just running unverified software on one's computer already constitutes something of a security risk - as demonstrated recently with the Spectre and Meltdown fiasco.

As usual, whenever some new technology is released, we will now perhaps need some time to think about how the use of AppImages may or may not be pertinent to our own ways of using the operating system in its various forms and distributions. My personal thought is that having another option is always welcome to exercise our own freedom of choice with our computers, but that this freedom always comes at the price of being responsible for our choices. I will be using AppImages and downloading other developers' applications, but always with an open eye as to their origin and authenticity.



Alan holds a PhD. He teaches comp sci and eng at Escola Andorrana de Batxillerat. He has given GNU/Linux courses at the Uni of Andorra and taught GNU/Linux systems admin at the OU of Catalunya.





I find myself using Freeplane to track my writing, tasks, and projects. Once a map gets to a certain size, it's hard to see the whole map at once. I could zoom out until I can see the entire mindmap, but I can't read the text or identify the icons. I need the ability to remind myself about that node on the other side of the map. You know, the one about the article that has a deadline tomorrow. Lucky for me, Freeplane has a time management feature that lets me add dates and reminders. Now, I get things done on time.

TIME MANAGEMENT

The time management features create reminders and add dates to nodes and attributes. To access the main time management dialog, use the menus Tools > Manage time. The Manage time dialog will appear on the screen. The dialog allows you to have it open and still work on your map. This means you can leave the dialog open when you need to access it often.

Three monthly calendars line the top of the dialog. The center calendar controls the other two. The first time you open the dialog,

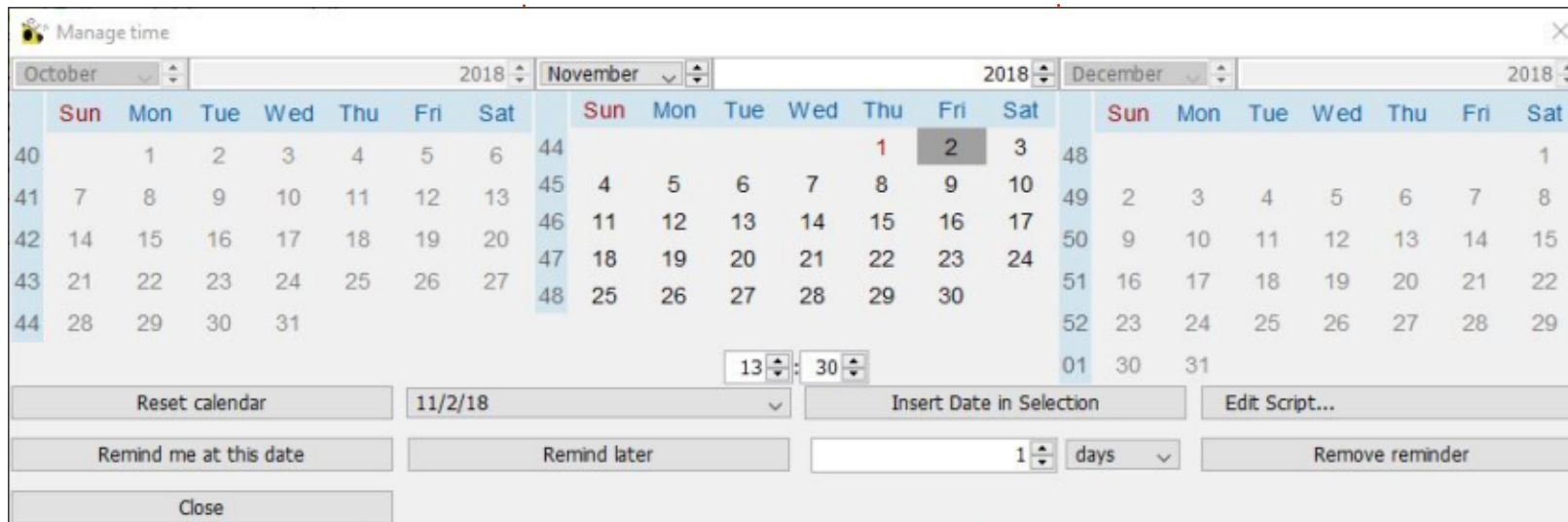
it defaults to the current date. The clock at the bottom defaults to the present time. You can use the month dropdown list to select another month, and the year number box to change the year. The left calendar is the month before the center calendar, and the right calendar is the month after the center calendar. The left and right calendars are for reference only. You can't change or select within them. The numbers to the left of each calendar are the weeks of the year.

There are three controls related to the date. The Reset calendar

button changes the middle calendar and the clock to the computer date and time. The clock works off a 24-hour clock, no AM or PM. The next two controls deal with inserting the date/time into the map. The dropdown list selects the format you want for your date/time. The 'Insert date in Selection' button places the date/time using the selected format into the map. You can insert the date/time to the core text or an attribute value. I will show you later the quickest way I've found for adding the date into an attribute value.

The last button on the first row is 'Edit script'. Clicking this button brings up the script editor window. After writing the code, click the OK button to attach the script to the reminder. The commands execute when the reminder activates. Creating scripts is a topic for another article. For now, know this is the place where you can attach a script to a reminder.

The next row of buttons deals with reminders. Reminders are the



key to the time management system. When a reminder is set to a node, you get an alert when the reminder becomes active. How it alerts you depends on the settings in the preferences.

The 'Reminder at this date' button creates a reminder in the selected nodes for the date and time in the middle calendar. Select the date, adjust the time to when you want the reminder, and click the button. If you hover over a node with a reminder, the reminder will display in the popup text. Freeplane adds a clock icon to the node, too.

The 'Remind later' button, the numeric spinner box, and the dropdown list work together to create a reminder that is offset from the current date/time in the middle calendar. The dropdown list is a list of periods: minutes, hours, days, weeks, months, and years. Enter the count for the period in the numeric spinner box. When you click the 'Remind later' button, Freeplane adds a reminder offset for the period based on the date/time in the middle calendar.

'Remove reminder' erases the reminder from the current node.

Use this button to acknowledge a reminder alert, too.

The Close button closes the dialog.

TASKS MANAGEMENT

After creating many tasks, it's nice to have a place to organize and work with them. Freeplane provides you with a dialog where you can work with your reminders. Open the dialog through the menus Tools > Manage tasks.

The dialog shows a list of the tasks in the map. The dialog contains 7 columns:

- Date -- the day/time for the reminder.
- Text -- the core text of the reminder's node.
- Icons -- icons attached to the node.

- Created -- the day/time the node was created.
- Modified -- the last day/time the node was changed.
- Details -- the text of the node details.
- Notes -- the text of the node notes.

You can sort the list on any of the columns by clicking the column name. The first click will sort the list in ascending order. The second click will sort the list in descending order. Further clicks will toggle between ascending and descending.

The Find text box can help you narrow down a long list. As you type, the reminders will shrink to only those containing the text. If you check the Match case checkbox, Freeplane will take the upper and lower cases into account. The Regular expression

checkbox lets you include regular expressions in your search.

Replace lets you replace the text in the Find field with the version in the replace field. For example, you want to replace all occurrences of Menu with Menus. You would type Menu in the Find text box and Menus in the Replace text box. When you click the Replace all button, Freeplane will replace all occurrences of Menu with Menus. After selecting specific results, you can click the Replace selected button to do the replacement only in those nodes. The Replace text box also has a Regular expressions checkbox.

The Export selected nodes button will export the selected nodes to a new map. You can use this to create a new file based on specific reminders. The Goto button will close the dialog and

Actions						
Find		Match Case <input type="checkbox"/>		Regular expressions <input type="checkbox"/>		
Replace		Regular expressions <input type="checkbox"/>				
Date /	Text	Icons	Created	Modified	Details	Notes
Nov 2, 2018 1:30:31 PM	70th Ave SS EasyC...		Nov 1, 2018 1:39:43 PM	Nov 1, 2018 1:42:09 PM		
Nov 5, 2018 10:00:00 AM	Coolbox Follow-up		Oct 31, 2018 6:18:36 PM	Oct 31, 2018 6:20:02 PM		
Nov 5, 2018 10:30:31 AM	Caraway Boat & RV...		Nov 1, 2018 1:48:55 PM	Nov 1, 2018 1:55:13 PM		
Nov 8, 2018 10:00:31 AM	Twin City CORE only		Nov 1, 2018 1:57:50 PM	Nov 1, 2018 1:59:07 PM		

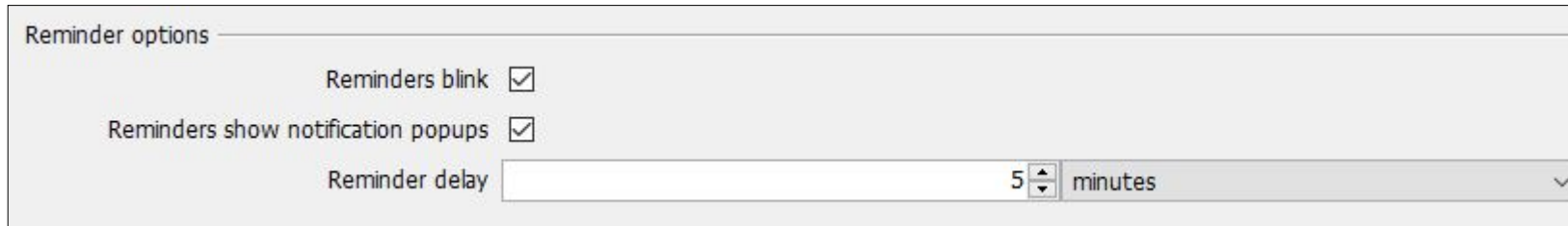
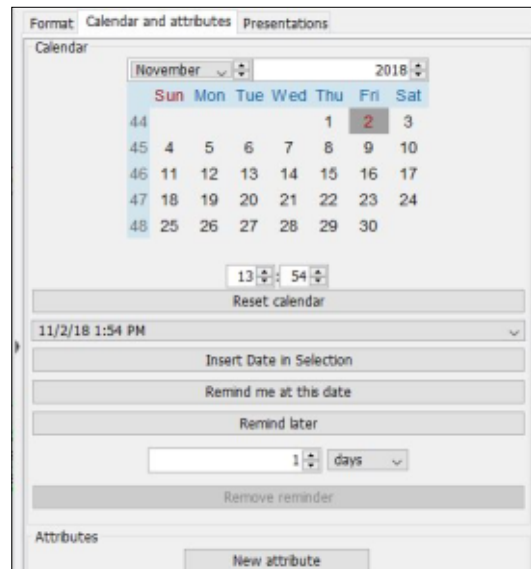
HOWTO - FREEPLANE

highlight the selected node. The Close button exits the dialog.

With the menus Tools > Remove reminder, you can remove a reminder without opening the Manage time dialog.

TOOL PANEL

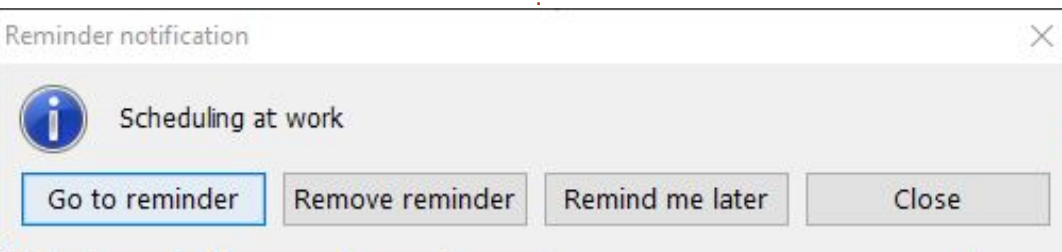
In the tool panel, there is a tab for Calendar and Attributes. There you find a monthly calendar that behaves like the center calendar in the Manage time dialog. All the buttons and dropdowns work the same way as they do in the dialog. Having them in the tool panel makes for quick access when you need to add a date or set a reminder.



I find the tool panel as the quickest way to add a date to an attribute value. Open the Calendar and Attributes tab in the tool panel. Set the date and time and select the format. In the attribute section, click New attribute. Select an existing attribute name from the dropdown or type in a new name. Select the value cell and press Enter. Click the Insert Date in Selection button. Press the Enter key again to save the value.

PREFERENCES

In the Freeplane preferences are settings to control the behavior of reminders. The settings are located in the menus Tools > Preferences. You find the Reminder options on the Behavior



tab. The Reminder blink checkbox blinks the reminder icon when the reminder activates. To show a reminder popup window, check the 'Reminders show notification popups' checkbox. The Reminder delay sets how long a reminder delays when you click the 'Remind me later' button in the reminder popup. Set the number for the period and the period to delay. The time periods are ms (milliseconds), seconds, minutes, hours, days, and weeks.

If you have the setting checked for the notification popups, a popup window displays for a reminder when it activates. The popup gives you four options:

- 'Remove reminder' acknowledges the reminder and removes it. This is like a 'done' option.
- If you need to delay the reminder, click the Remind me later button. The reminder is suspended for the amount of time defined in the preferences.
- The Close button exits the popup and does nothing.

Through the date and reminder options, you can manage your projects in Freeplane. Along with the attributes, you can use Freeplane as a project management platform. In the next article, I will walk you through setting up a project template that you can expand.



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In FCM#138, I showed you how to gather information about the ambient brightness with an LDR, how to communicate to a remote device at distance, and how to set up the watchdog timer (WDT) to save energy.

In this issue, I will show you how to code subroutines for the WDT to make refactoring of the code a bit easier, and to expand the transmitter with an optical signal for the data transmission and measuring the battery level to indicate when a battery change seems needed. Further, I will show a short program for the personal computer to receive the transmission, filter the input, and save the data of interest to a file.

EXPANDING THE SLEEP TIME

A transmission every 8 seconds would be a large amount of information. In numbers: a day has around 86,400 seconds; if a transmission takes place every 8 seconds, there would be 10,800 transmissions each day. This would

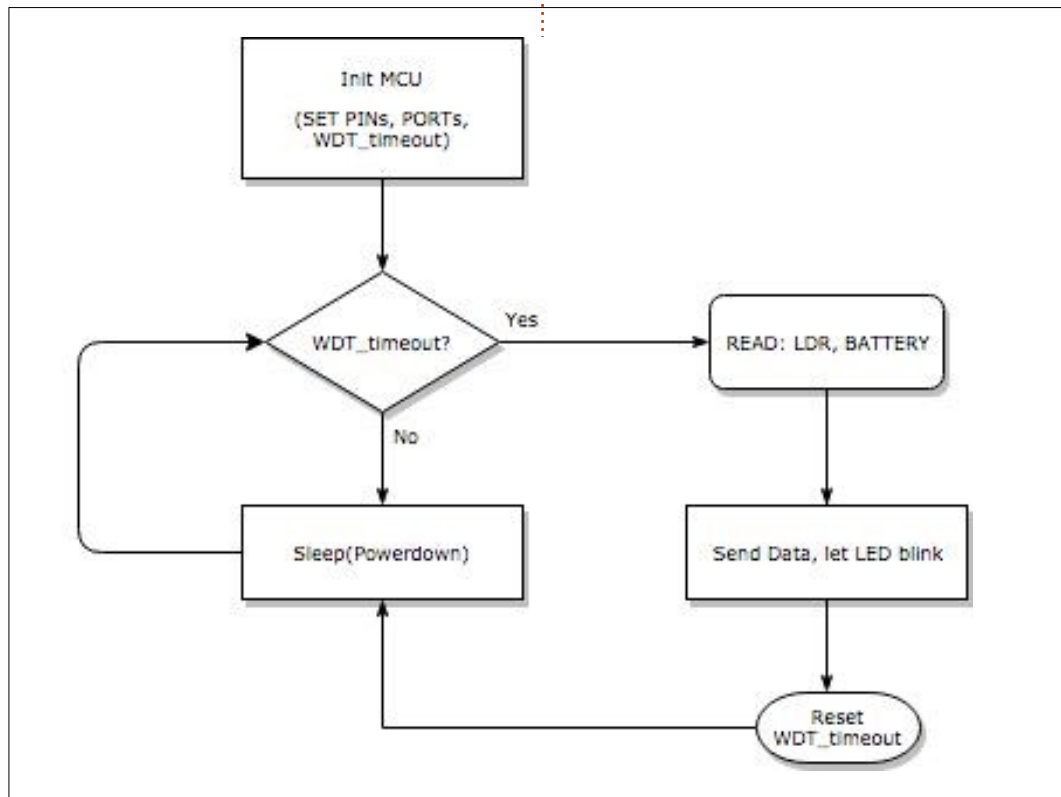
be a heavy overhead; the light level we will measure should not change too often - maybe only in some cloudy situations. In the end, there would be too many duplicate values to handle.

So it would be great to have the microcontroller sleep longer than this 8 seconds to minimize the data transfers and to save power. Due to the limitations of the WDT, this

can be achieved only with a loop condition. For an overview, see this simplified diagram of the following software. At the very beginning of the program, we define a timeout variable; the device will wake up every 8 s, check if the timeout has occurred first. If not, it decreases the timeout by one and immediately goes to sleep again. This should only take a very little amount of power. The reading of

the ADC, the measuring of the battery level, etc, will take place only after the timeout. To determine the timeout, just think of the time frame you want your transmitter to send data. One minute has around 8 wakeups of the device ($8 \times 8 \text{ s} = 64 \text{ sec}$. roughly 1 minute). To save some program space, I suggest to stay in the range of a byte value (max. 255). Setting the timeout to 225 will give a time frame of 30 minutes.

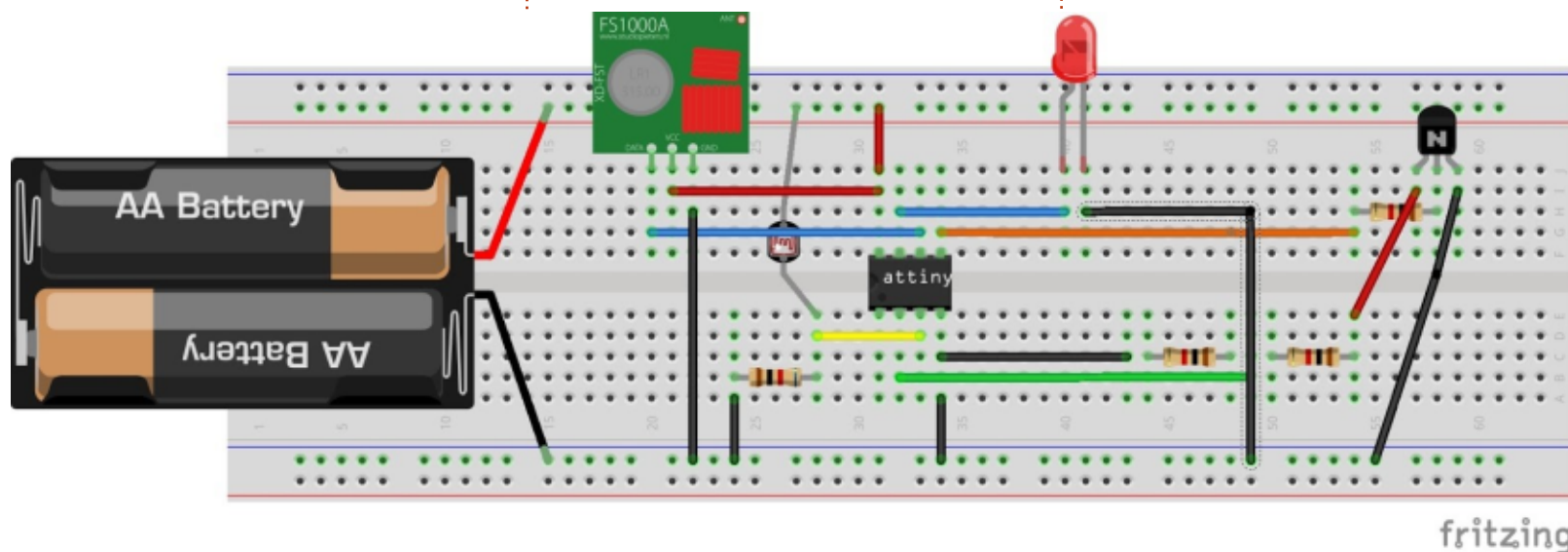
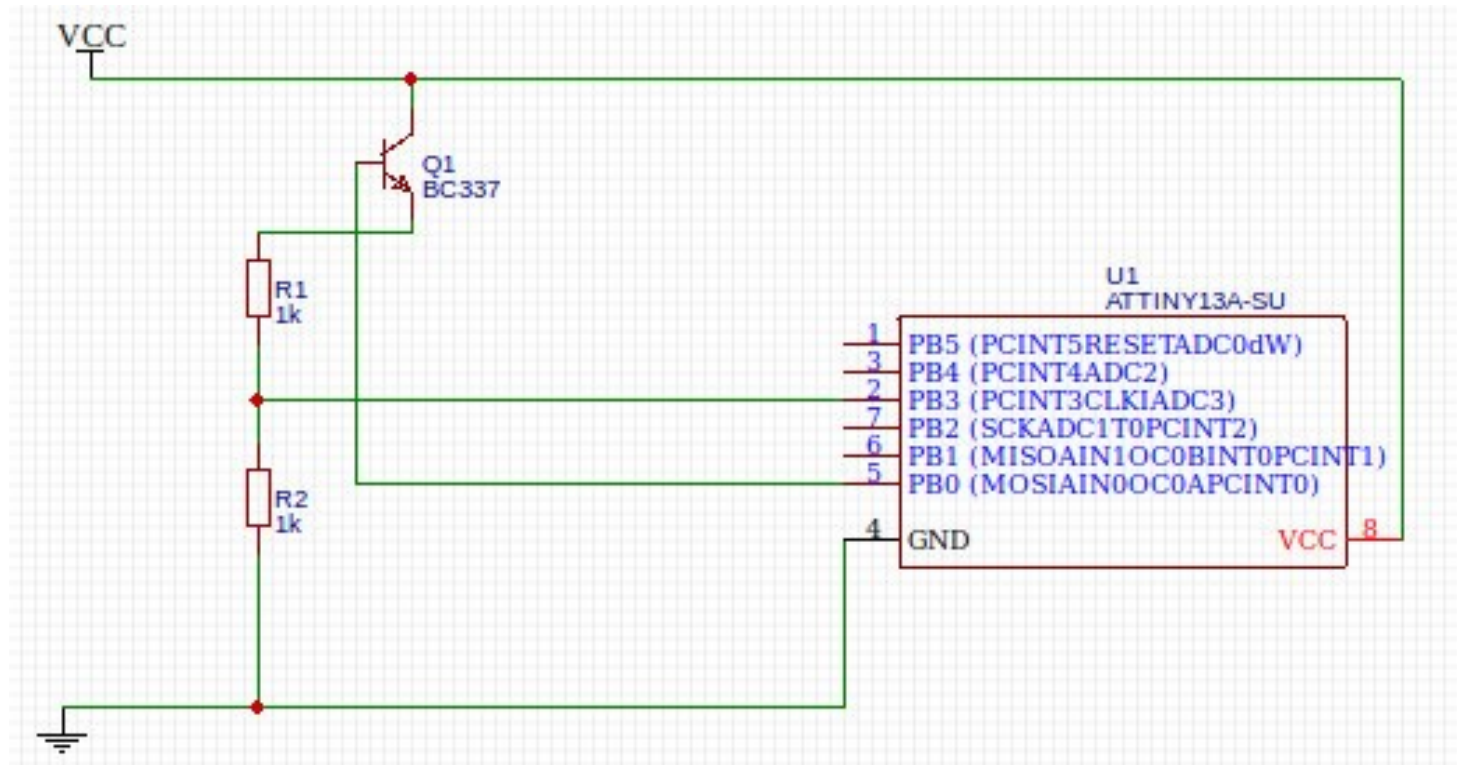
If the timeout occurs, the microcontroller wakes up, activates all of its peripherals and sends the data over the air. After the work is done, the microcontroller goes to sleep again. With this method you reduce the data transfers to around 48 transmissions a day. Hint: For debugging purposes, you would want to set the timeout to a smaller value, maybe 1 to get a transmission every 8 seconds.



MEASURE THE BATTERY LEVEL

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The ATtiny13a can measure its own battery voltage through the ADC and a voltage divider. Unfortunately, the ATtiny13a needs two PINs to achieve this. See Ref. No. 1 for an in-depth explanation and alternatives to the ATtiny13a which have the ability to measure its own power supply by reading against their internal bandgap reference. This will save some parts and PINs. For this application, there are some PINs left over, so no reason to save at the wrong end. Because the transfer of the LDR and Battery-Values costs more program space due to casting the word-values to string-values, we need to avoid as



much conversion as we can. The solution to this is to print the readings of the LDR and the Battery directly to the serial line. Further, we send the signs “#” and “;” as ASCII byte-value for the very same reason. Nonetheless, the transmitter code occupies most of the program memory of the microcontroller.

Data logging and evaluation

To know when a certain light level occurs, the data has to

HOWTO - GREAT COW BASIC

include the actual time and date for further examination. To save some space on the hard disk, we read the data from the serial line and strip the unnecessary or false information. Maybe you have the FreeBasic-Installation from Issue 127 still intact, so you can compile the following yourself. Otherwise take this as an idea to be implemented in the programming language of your choice.

Sample results in the serialdata.raw file; shows timestamp, LDR value (brightness), and Battery voltage (Vcc). Note that we have sets of three lines with the same (or similar) timestamps, and then 8-second gaps between sets.

(Vcc or better the ADC here is floating, the circuit was not

complete) --

13.11.2018, 22:40:55;26;438
13.11.2018, 22:40:55;18;432
13.11.2018, 22:41:03;28;449
13.11.2018, 22:41:03;24;437
13.11.2018, 22:41:11;27;441
13.11.2018, 22:41:11;23;428

BREADBOARD CIRCUITRY

CONCLUSION

The transmitter program has 928 Bytes and so the program memory of the ATtiny13a is almost full, but it is a good starting point for your own experiments - maybe you change the LDR and measure temperatures with a negative temperature coefficient thermistor or short: NTC. Or if the code can be sized down, you could try a temperature and humidity sensor, such as a DHT11 or DHT22. As the

time got short on this article I haven't gathered a full day of data - but I will publish it in the github-repo, soon. For this set of articles and the concluding project we are almost there - in the next issue we will tie the loose ends and see how we can bring the analog digital conversion, the pulse-width modulation and the watchdog timer together and form the ultimate LED flickering candlelight. Coincidentally it fits in the season.

SOURCES

If you want to download the source instead of copy-pasting it, you can now check it out with git or an SVN client. See goo.gl/aDvqgg for more information.

REFERENCES

Microchip AVR AN2447: Measure VCC/Battery
<http://ww1.microchip.com/downloads/en/AppNotes/00002447A.pdf>

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There's a part of the Inkscape user interface that is so common, and so taken for granted, that you've probably never given much thought to it: the page border. Yet this seemingly mundane part of the display plays a vital role when it comes to creating SVG files for use online. By understanding what it represents, and how to manipulate it, you will open up some techniques that can make your SVG files far more versatile, even if they're only being included via an `` tag.

By default, creating a new document in Inkscape will create an A4 page (210x297mm), displaying a thin outline to represent the page border, and a drop shadow to make it look a little more like a page of paper than a simple rectangle. I can't say for certain if A4 is used as a default everywhere, or if there is a locale dependency that creates US Letter pages in the USA, for example, but either way, you get a default size and visible page border. Changing the page size is done via the File >

Document Properties (Ctrl-Alt-D) dialog: you can either select one of the predefined page sizes or enter a custom width and height, with your choice of units. The bottom of the dialog also provides options to show or hide the page border and to display it without the drop shadow, if you prefer.

I've seen a few video tutorials where the presenter heads straight to this dialog to turn off the page border, but I think that's usually a mistake. If you're designing for print then having an idea of how your work fits into the page is essential. But the border is just as important for web work, as anything that is drawn outside it won't be rendered by the browser. If you turn the border off, there's a real danger that parts of your design might inadvertently fall outside it, preventing them from rendering as expected.

The non-display, or non-printing, of content outside the page border, can be a blessing. If your design has to bleed off the edge of the page, it can be

essential. You can also use the area outside the page to store rough designs, notes, spare elements, or the source objects for clones (particularly those with unset fills) – anything which you want to keep with your image, but don't want to be visible in the final product. I've often used this capability to include Easter eggs in my comic strips – even to the extent of holding extra panels or even entire extra strips that can be found only by opening the original source file in Inkscape.

For many uses, the page size can natively be set in the Document Properties dialog, with no need to concern yourself any further. This sets the "width" and "height" attributes on the main `<svg>` which determines the default size that your image will be drawn in the browser. For an icon design, for example, you might set the dimensions to 32px by 32px, and that's the size it will be rendered. But what happens when you want to use a different scale inside your drawing? Your drawing might be in metres or even miles,

yet you still want it displayed at a reasonable size in the browser. For this, there is the `viewBox` attribute.

The `viewBox` attribute is a list of four numbers, representing the x and y coordinates of the origin in the drawing, and the width and height of the drawing in "user units". Let's look at a couple of examples:

```
<svg ...  
  width="100"  
  height="200"  
  viewBox="0 0 100 200"  
... >
```

This one's simple. The width and height of the image will default to 100px by 200px, and the coordinates in the drawing are mapped to the image on a 1:1 basis. If you draw a rectangle that's 100 units wide and 200 units tall, it will fill the available space in the browser window (assuming you position it at the top left of your drawing). Let's try another:

```
<svg ...  
  width="100"  
  height="200"  
  viewBox="0 0 500 1000"  
... >
```

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Again the image will render to a size of 100px by 200px in the browser. But the viewBox defines a different coordinate system. Now 500 units in the drawing map to 100px in the browser. If you draw a rectangle that's 100 units wide and 200 units tall this time, it will occupy only one corner of the image (actually being drawn as 20px by 40px in the browser). To

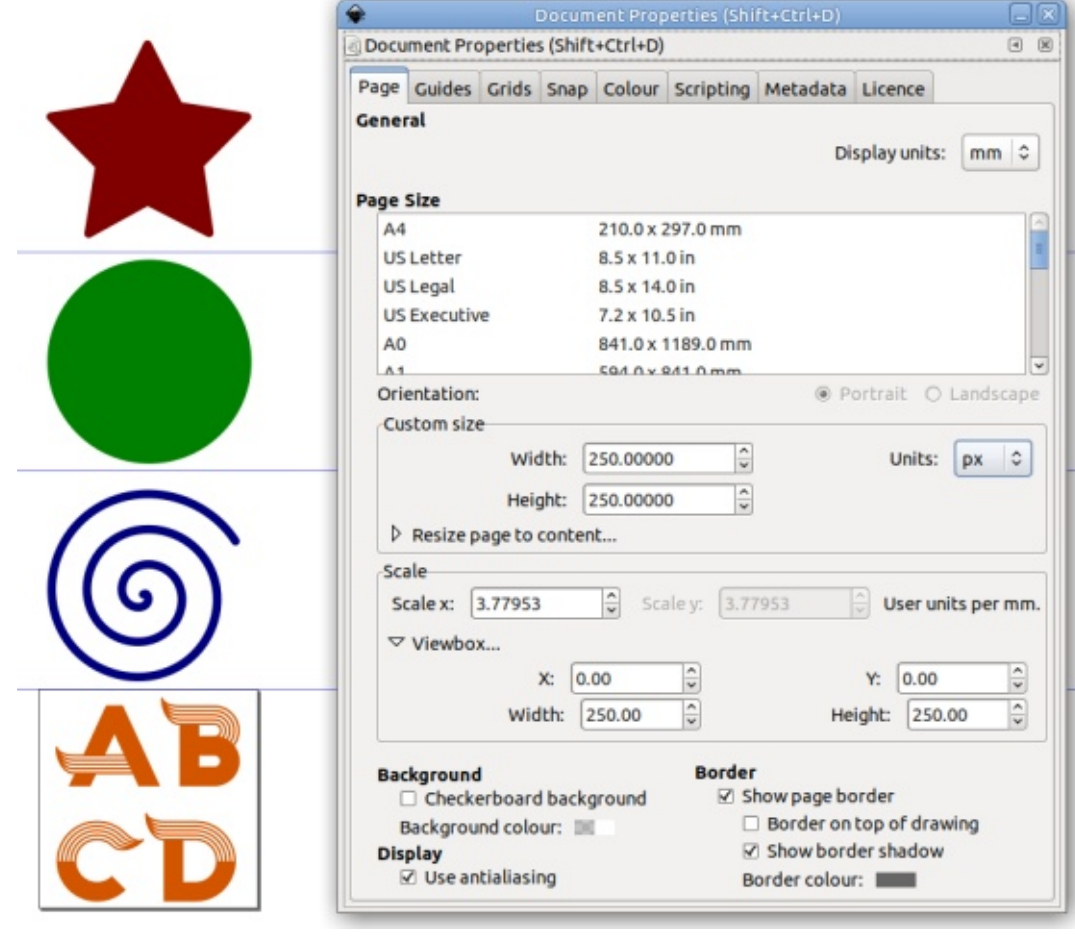
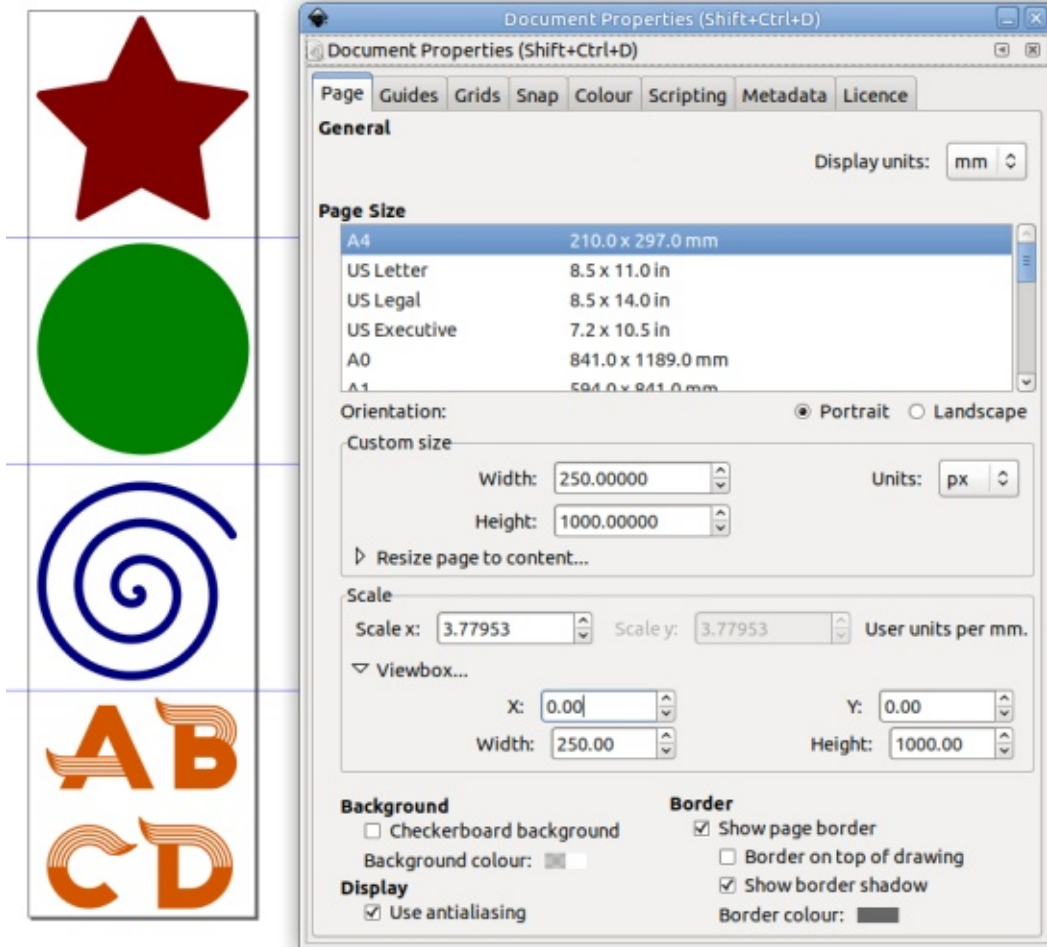
fill the image, you would need to draw a rectangle that's 500 units by 1000 units.

Changing the x and y values lets you move the origin of your coordinate system. It lets you say "the origin for the browser (i.e. the point that's used as the top left of the image) should actually be 100 units down and 50 units across in

my drawing". Another way to think of it is that the viewBox lets you create a viewport into your drawing of a specific size and location: everything inside the viewport will be scaled up or down to fill the image in the browser; everything outside the viewport will be cropped and left un-drawn.

For use in a web page, this

capability to render only part of the image lets us perform a rather neat trick. By changing the viewBox values, we can selectively display subsections of the file, letting us store multiple images in one file. This reduces the number of network requests needed by your page, in turn speeding up your site.



HOWTO - INKSCAPE

Consider this collection of four images – a star, a circle, a spiral path, and some text in the rather wonderful free font, Trump Grotesk Bold. I've drawn them in four sections of a tall, thin page that is 250px wide by 1000px tall (so each element occupies 250px by 250px). With the viewBox set to "0 0 250 1000", we have a 1:1 mapping when the image is drawn

in the browser. You can pretty much ignore the "Scale x" and "Scale y" values – they get set automatically by Inkscape as you change the viewBox fields.

As you might expect, when I save this image and load it into the browser, I see all four elements, taking up a space of 250px by 1000px. But look what happens if I

change both the page height and the viewBox height to 250:

As you can see, the page border only surrounds the text. If I save the page and load it into the browser, all I get is a 250px by 250px image showing the text element.

If I now set the "y" value for the viewBox to -250, thus moving the viewport upwards, only the spiral appears in the page. Saving the file and loading it in a browser now only renders the spiral, hiding the other three elements.

I'm sure you've worked out by now that setting the "y" value to -500 will put the page around the circle, whilst -750 puts it around the star. Now let's just remind ourselves what the HTML tag looks like to render this image:

```
</img>
```

Well that's pretty terse and to the point. It just tells the browser to show the "views.svg" file using the width and height set in the SVG file, and displaying the default viewport set by the viewBox attribute. But we can append a little magic to the filename to tell

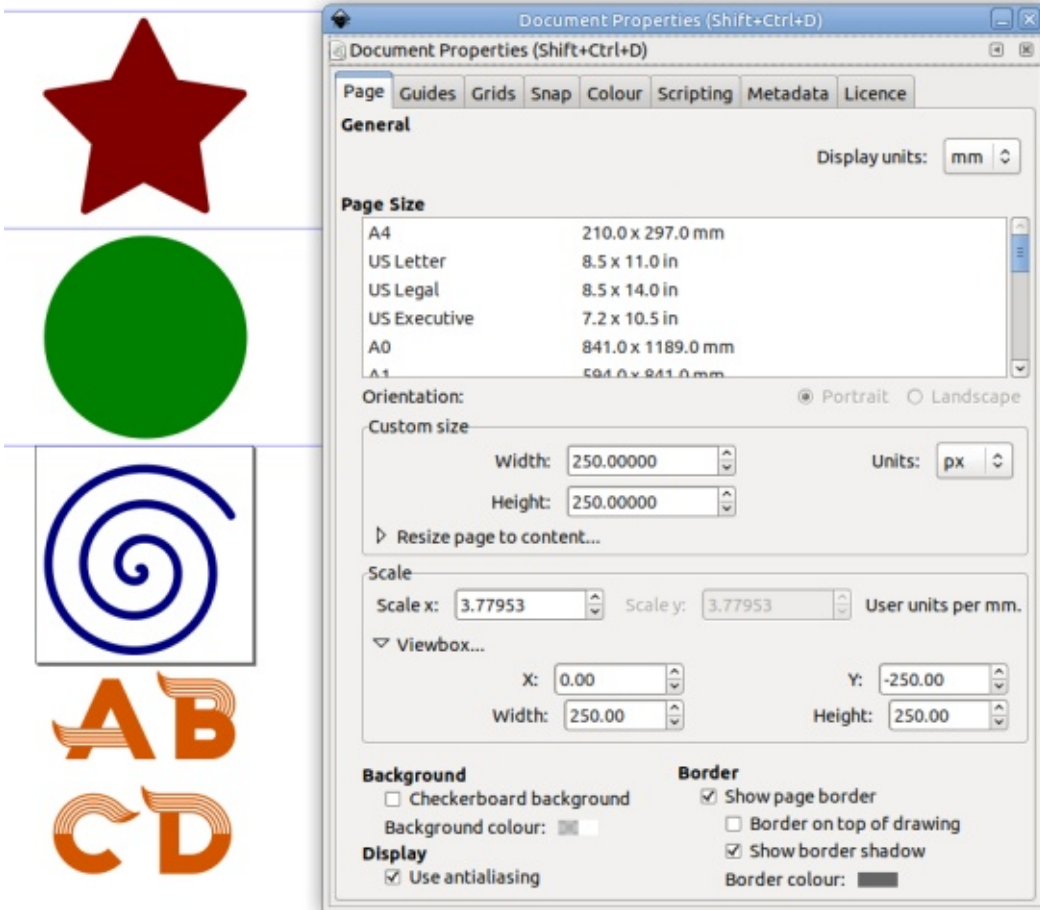
the browser to override the default viewBox:

```
</img>
```

By changing the viewBox values in the URL we can therefore select a specific region of the image to display. In this case, it allows us to choose between one of several sub-images, making this approach ideal for files that contain multiple icons or logos. An alternative is to use viewBox values that focus on a particular part of your design, or cause some section to be zoomed in. That gives you the possibility of showing, for example, an overview and a detail view, both taken from the same image.

Hard-coding the viewBox dimensions into the URLs does have one significant problem: if your image changes, such that elements are swapped or moved, you also need to update the HTML or CSS file containing the URLs. SVG has an answer to this problem as well: named views.

Named views are, as you might have guessed, a way of giving a particular set of viewBox values a



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name – that can then be referenced from elsewhere. Unfortunately, Inkscape has no specific support for them, except to expose the underlying code in the XML editor. But the syntax is straightforward enough that they're easy to add via a text editor. They can go pretty much anywhere in the SVG file, but as they're not visible objects in their own right, I prefer to keep them in the `<defs>` section where things such as filter and gradient definitions live. Named views can be thought of as `viewBox` definitions, so this location makes sense to me. Here's an example of the top section of the SVG file above, once I've added named views for each of the objects to my `<defs>` (below).

In this example, the `viewBox` attribute in the `<svg>` element is

```
<!DOCTYPE html>

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

<body>
  <div>
    </img>
    </img>
    </img>
    </img>
  </div>

  <br />

  <div>
    <p>Look! </img>
    A single SVG file </img> used for
    </img> four different inline icons!
    </img>
  </p>
  </div>
</body>
</html>
```

```
<svg ...
  width="100"
  height="200"
  viewBox="0 0 250 250"
  ... >
  <defs id="defs">
    <view id="textView" viewBox="0 0 250 250" />
    <view id="spiralView" viewBox="0 -250 250 250" />
    <view id="circleView" viewBox="0 -500 250 250" />
    <view id="starView" viewBox="0 -750 250 250" />
  </defs>
<!-- Rest of SVG file follows... -->
```

set to show the text content, but I could equally have set it to show all four objects, just a couple of them, a smaller part of one of the objects, or any other rectangular space in the image. This is the `viewBox` that will be used by default if nothing else is specified in the document's URL.

In the `<defs>` section, you can see that I've also defined four `<view>` elements. Each of these has an ID that will be used to reference them later, together with a `viewBox` attribute. The IDs aren't special: I've called them "textView", "spiralView" and so on, simply to make it clear what they're showing, but I could

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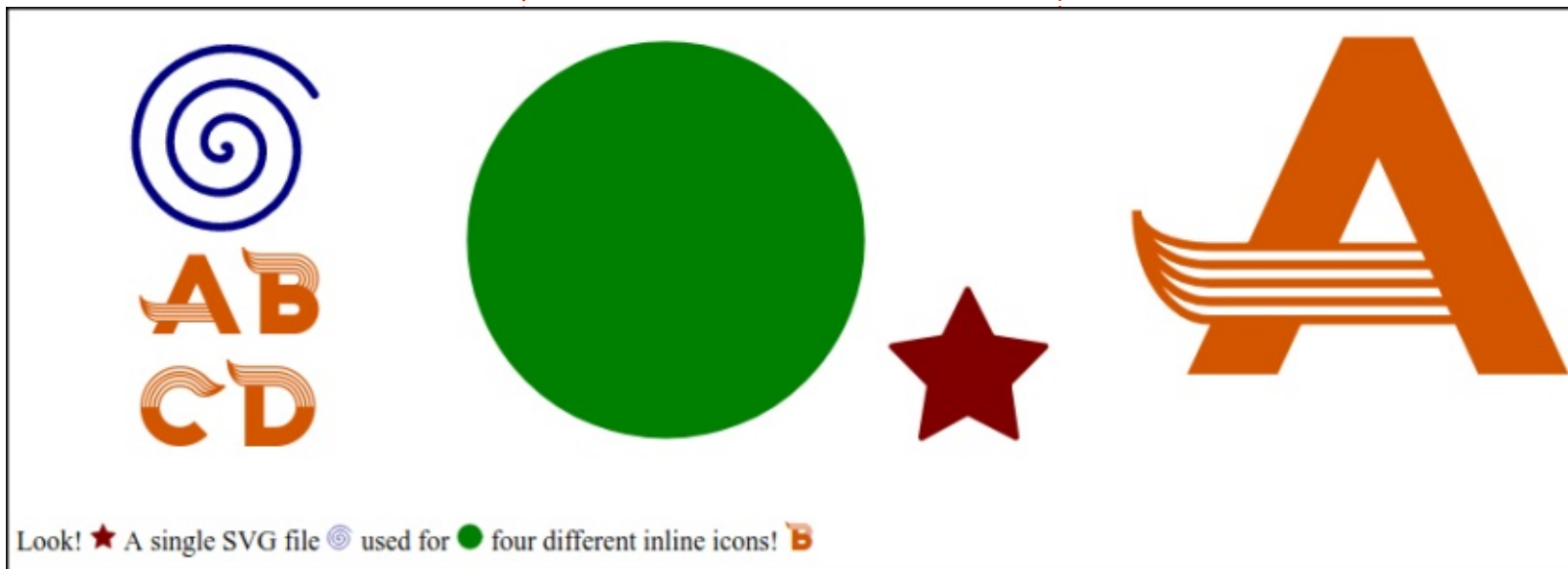
equally have gone for “fred”, “wilma”, “barney” and “betty” – had I wished to. The only requirements are that they are valid XML IDs, and are unique within the document. If in doubt, stick to plain text with no punctuation and you should be okay.

Using your named view in an `` tag is trivially straightforward – you just have to set the appropriate ID as the fragment identifier (the bit after the “#” character in a URL):

```
</  
img>
```

Of course there’s nothing to stop you referencing the same image more than once in a web page, with a different fragment identifier each time. You can also mix and match named views, the “`svgView()`” syntax, and the default `viewBox`. In this way, a single SVG image can easily be used to provide a whole host of icons and other images for your page. To finish off, here’s an example of an HTML document that uses the SVG image from this tutorial:

You should now be able to understand how our single SVG image is used multiple times to give the final result:



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

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



LINUX LOOPBACK

Written by S. J. Webb

PLATO

While the Athena Project was occurring at MIT, the University of Illinois had a similar project called PLATO (Programmed Logic for Automatic Teaching Operations). It ran on the University's ILLIAC I vacuum tube computer. The central goal was to advance computer system instruction.

The creator of PLATO was Donald Bitzer in 1960. He created the PLATO system as a demonstration unit for the university staff. There was an overwhelming sense of

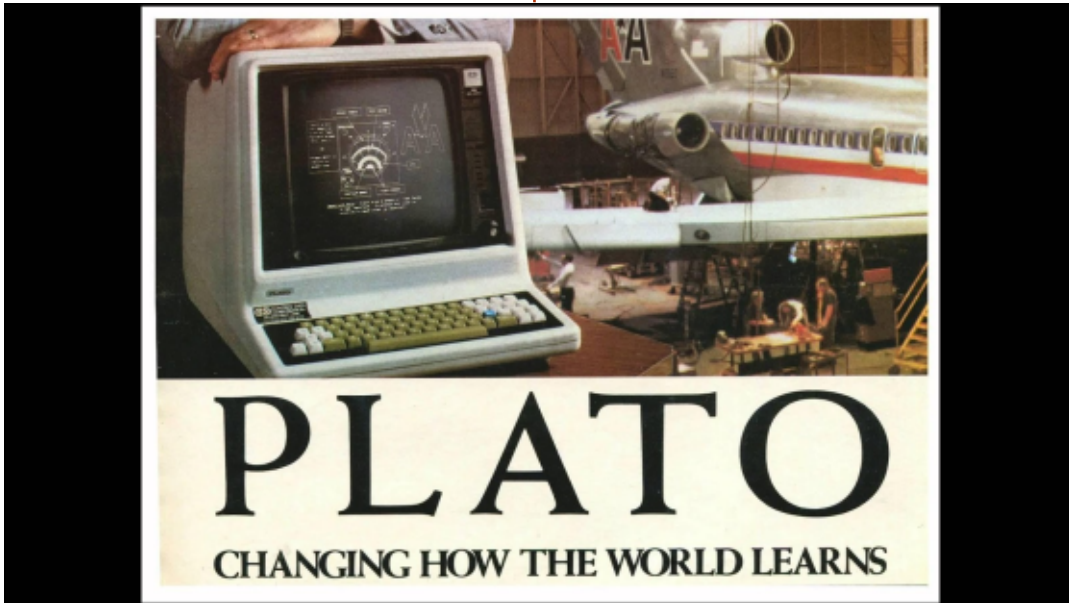
educational failure in the United States since the USSR sent the first satellite into space. Thus the need for an improved computer science education was on the horizon. PLATO went through numerous upgrades, and was funded in part by the military over time. This computer system was used for 40 years solidly. It was the automated means to teach college students.


However, an interesting facet to PLATO was the online community developed by students and professors. By the late 1970's, email, chat rooms and instant

messaging were standard tools.

It was also the inspiration for developing the popular games Doom, Flight Simulator and World of Warcraft.

The success of this system on the campus led to a commercial line being developed as CDC, Control Data Corporation. This company's sole purpose was to develop and sell PLATO Systems to universities that could not afford computerized coursework. Eventually, the system was being billed as a universal computer tool from agricultural crop information systems to retraining unemployed workers. It implemented the first online professional testing environment within the finance and banking industry. However, the system eventually lost out to the microcomputer revolution in the 1980s'. The price, user training, and terminal costs drove the company out of business.



 **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.



Last month, we covered how to set up and run DOSBox for the purpose of running old DOS games. Another type of retro gaming that I'm personally fond of is arcade gaming. Our Linux machines can take us back to the glory days of the 80's video arcade in more ways than one. I've been a fan of MAME, the Multiple Arcade Machine Emulator, almost since the very beginning. Back when the project was first launched, it was updated every week, and I remember the times when support was first introduced for games like Zaxxon, or Asteroids, or Defender, very prominent and popular arcade games that were not initially supported when MAME launched. It was quite exciting to anticipate what games would get support next. I was very surprised when they were able to translate vector based games like Asteroids and Battlezone to run on a raster monitor!

How MAME works is that owners of the original arcade games dump the contents of the

games' ROM chips into a format our computers can read. MAME has core emulation built in for the common CPU's of the time (Zilog Z80, Motorola 6502 and 6809, and others). Emulation is built in for the original arcade machine sound and displays, and the ROM code is run to reproduce the original arcade machine precisely. The project has grown by leaps and bounds over the past 20+ years, and hundreds, possibly thousands, of classic arcade games are now supported.

As to the issue of ROM's, only a relative few sets have been released as freeware or have lapsed into the public domain. We'll be using one such set as we set up MAME on our Linux machine. Go to the MAME ROM download page at mamedev.org/roms and pick one of the free distribution ROMs available. Targ and Victory by Exidy are great games, and Looping from Video Games is an obscure gem (loved the Colecovision version back in the day!) Download the set and save it to your local drive.,

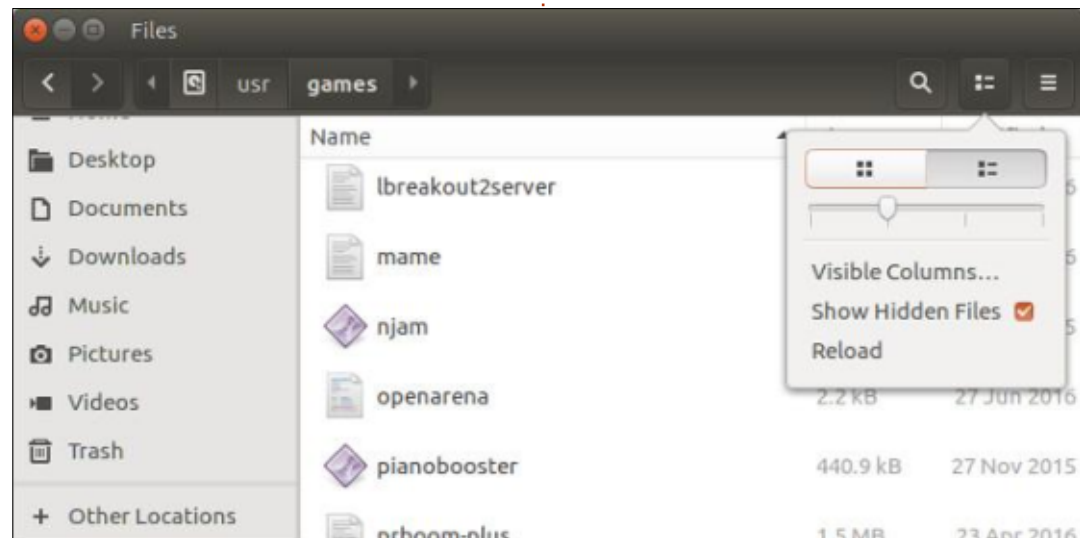
Now we need to set up MAME itself. We're going to need to install first, which I prefer to do through apt-get. Go to the Dash in the top of the control strip and search for Terminal ('term' should suffice) and launch it. Type in the following:

```
sudo apt-get install mame
```

and hit Enter. Respond to any prompts as necessary, including input of your password, and allow MAME to download and install. Once it has completed, return to the Dash and search for MAME, then launch it. This will create

needed folders in your home directory. Go ahead and close MAME back down. If you go back to your file explorer now and check your home directory, you should see a .mame folder. You may have to turn on hidden files to see it – click the middle icon in the top right and click Show Hidden Files to toggle the display of hidden files off or on (shown below).

It is a noteworthy and important Linux convention that any folder that starts with a '.' will be hidden, so that's exactly what has happened with the '.mame' folder automatically created when



HOWTO - EVERYDAY UBUNTU

we first ran MAME. Now, though, we can see it and work with it. If there isn't a folder called ROMS in the .mame folder, create one. Click the 'hamburger' icon (the three bars) farthest to the right in the upper right corner and select New Folder, then rename the new folder to 'ROMS'.

Copy the existing ROMS you downloaded earlier from their current folder to /home/.mame/ROMS. Fortunately, MAME now supports the ZIP format natively. We used to have to unzip all the ROM sets manually before we could use them in earlier versions of MAME (when we weren't walking to school uphill, through the snow). Launch MAME so we can configure it. Below is the

MAME interface.

Go to Configure Options in MAME, then Configure Directories.

Pick ROMS, Click on Add Folder. then go to .mame/ROMS. Now, once you re-run MAME, you should see the games that you have the ROM sets for, ready to be run. MAME supports an astounding number of the games we used to enjoy in the arcades back in the 70's and 80's in particular, so now you can get your Donkey Kong on again, if you have the proper ROM set.

Another great source of arcade classics is the now freeware collection of CHAMP games. I bought a couple of these back in

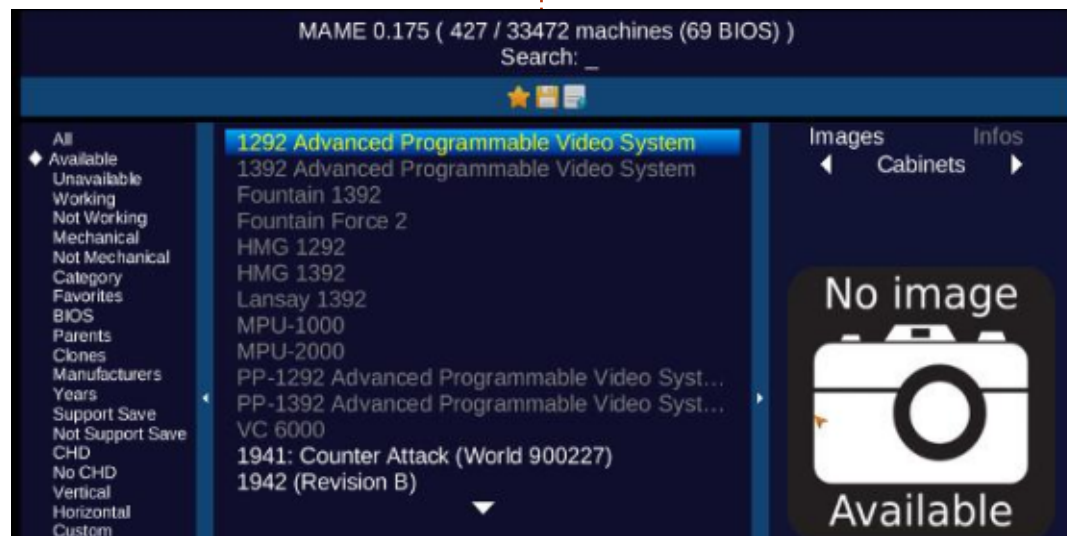
the mid 90's, and was very pleased. CHAMP took original games like Donkey Kong, and Pac-Man and emulated them pretty closely (not as precisely as MAME, as CHAMP was coded to resemble the games, not exactly duplicate them). CHAMP games also included CHAMP modes that enhanced and extended the game play. You can find the complete CHAMP collection at <http://www.champ-em.com/download.htm>. They can be run under DOSBox (see FCM#137 - Everyday Ubuntu column for specifics on running DOSBox) and provide a very

satisfying and enjoyable arcade-type experience. And the price is right – FREE!

Next month: Part 3 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.





UBPORTS DEVICES

Written by UBports Team

BACK NEXT MONTH.

HOPEFULLY, WITH OTA-6.



George RR Martin uses Linux

How do you know?

**Simple, because of the
'killall' command...**





As we step into the era of the EU's General Data Protection Regulation (GDPR), we have to look at security on our Linux boxes with a critical eye. I often hear: "Encrypt everything". That is a good start, but Linux security is about so much more than encryption. Encryption is not the magic pill to fix all our problems. This month we will take you through some considerations when it comes to security. I will cover a brief introduction, then a quick touch on security guidelines.

We will then go over the four pillars: P.A.N.S, Physical, Account, Network and System security. (S.N.A.P).

The foundation of security is in understanding the concepts. I usually end up having to write policies and procedures for quasi-government entities... that they don't follow... but still need to have the paperwork if anyone asks. (Bureaucracy...). I thought it may be a good idea for the wider audience to understand security from our perspective.

Linux is considered to be a secure system, but there are a lot of factors that affect this "secure" status. You need to be informed to make good security-conscious

decisions. This is where I will help you. I will provide that information. Please don't assume anything. For an attacker, the holy grail is always root. Root has the power to do

anything and everything, so even the mighty file permissions crumble before root. This is also why I always say: never run a service as root (and I see this more



than I care to remember). Linux is a multi-user system, use that to your advantage.

Some of the principles I mention here are not just Linux specific; they can be applied in a much broader spectrum. When it comes to software, there is NEED vs. NICE TO HAVE. On a Linux server, if you don't need the software or service, stop it or uninstall it. Do not use the same password for everything, and do not put all your eggs in one basket. What do I mean by that? If your server runs your file sharing, and your web server, and your database, it means that if someone gains access to your web server, they now potentially have access to your files and your database. That means if your log files are stored on that same server, the 'someone' who gained access to your server, can delete his tracks. If you store sensitive data, it is a good idea to have multi-level authentication; I say multi-level – because two-factor-authentication is not enough. With the new legislation, you will have to prove that you did everything in your power to secure your data (as I understand it). Do not relax security just because you are

behind a firewall or your servers are not directly internet facing. Security is not fire-and-forget either; it is an ongoing process. Lastly, I want to touch on the principle of least privilege. If you need to, then print it on a piece of paper and stick it to the back of your office door. This is an important concept that most places ignore. It is so easy to change the permissions on a file in a web server to 777 when something is not working, and, because your mind is focused on the problem, you forget to change it back. Everyone makes mistakes, we need to make sure they do not.

Let's look at Physical security: How easy is it to access your servers? When I say physical security, I also mean virtual servers in the cloud. After all, you have to choose your cloud service provider. I am not an advocate of the new hipster server rooms where the server rooms are behind glass in the reception area or common public place. I understand that you paid a lot of good money for it and want to show it off, but I'd rather the public did not even know I had a server room.

No other security matters if

someone has access to your servers. (I will not even go into the ways Linux can be compromised if someone has physical access to your servers.) Ideally, you'd want multiple layers between your servers and the outside world. My general rule of thumb is that no person enters the server room until it can be locked and someone can be held responsible to keep it locked. You want all the work in the server room done before moving the servers in. There is no use in having a locked door when you have to let painters and electricians and general labourers in to work around your servers for the next two weeks. Prioritise. CCTV is another necessity. Do not be penny wise and pound foolish. Years ago, I used to subcontract to the banks; the irony was not lost on me that the cash centres had multiple steel doors and armed guards, while the computer override was operator 20, to which I could get the password from the supervisor and transfer 100 times the money in the cash centre without an eyebrow being raised (if I were that way inclined). Your security is only as strong as its weakest link. Do not skimp on physical security. The current penalty, as per the GDPR, is up to

4% of annual global turnover or €20 Million (whichever is greater). This is the maximum fine that can be imposed for the most serious infringements. Thus adding a lock and maybe biometric scanners is a good start, though your physical security should extend beyond the server room. Virtual servers are not exempt from GDPR regulation, so assess the physical security of your cloud provider. Do not assume your cloud provider measures up, inspect. Should you run afoul of the law, the penalty is heavy.

Join us again next issue as we look at the next part of P.A.N.S. (or S.N.A.P – whichever you prefer)



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.





HOW-TO

Written by Ronnie Tucker

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

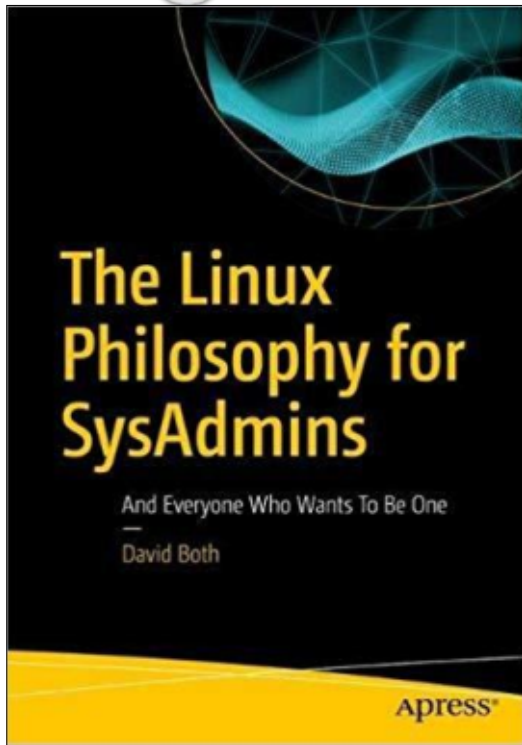
HARDWARE

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.





The Linux Philosophy for SysAdmins (And everyone who wants to be one)

Author: David Both

ISBN-10: 1484237293

Year: 2018

Website:

<https://www.apress.com/gp/book/9781484237298>

Price: 37,99 Euros

From the description:
Reveals and illustrates the awesome power and flexibility of the command-line, and the design and usage philosophies that support those traits. This understanding of how to extract the most from the Linux command-line can help you become a better SysAdmin. Understand why many things in the Linux and Unix worlds are done as they are, and how to apply the Linux Philosophy to working as a SysAdmin.

This author is not afraid to drop a fork bomb on the unsuspecting public within the first few pages. There was a lot of blah-blah TL;DR in the beginning, but I suppose one has to go back and look at the title of the book, LINUX PHILOSOPHY. When I open a book like this, I hunger for knowledge. I cannot get to the 'meat and potatoes' quick enough. I am the happiest when I am learning something new, especially when there are real world things to do. This book slows the pace a bit, and I am reminded that not everyone

starts at the same spot. Just like the Dr. Strange movie - the warnings come AFTER the code samples, so read carefully!

The book is like a river and one topic flows into the next. One can see a lot of thought went into writing this book. I cannot say I have come across David Both before, but he is most definitely going on my list of authors to look out for. I really enjoyed chapters like "logs are your friend". Revisiting things like sar – that we forget about these days with monitoring dashboards, etc. Things seem to be mostly from a Red Hat based distribution point of view though, and I would have appreciated it from a Debian-based perspective too. I do not mean this in a bad way, just files like `var/log/secure` may have the newbie administrator fretting that he may have missed something. You and I may know to look in `look in /var/log/auth.log`, but since this book is aimed at newcomers and seasoned Administrators alike, I think it should have been mentioned in the same sentence.

The author also points to examples on the web, specifically howtoforge (brilliant website), and examples on github. Chapter 9 'Automate Everything' is my favourite chapter in the book. Clear explanations on quite a few topics, and alternatives to the same-old, same-old.

In the fourth part of the book, 'Becoming Zen', the author even touches on hardware (briefly). Throughout the book, 'cowsay' pops up to put a break in your pace, to remind you to rest your eyes and smell the roses.

This book is a treat of old and young alike. Get your copy now.

Four stars for a most enjoyable read.





LETTERS

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

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ubuntuforums.org/forumdisplay.php?f=270

FULL CIRCLE NEEDS You!



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

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

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



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.

I used to work for a company who subcontracted for IBM. Somehow we ended up subcontracting for Olivetti as well. A large Insurance company, who was one of our clients, had a way to misplace their IBM PC info. When I got a call for an Olivetti PC at the same client, I was unsure and called the end user. I got an old lady on the other end, she said to me: "Sonny, this typewriter's television screen is dead." Prompting her for model numbers, etc, was fruitless. Since they were four hours drive into the wilderness, I packed not only an Olivetti screen, but cables and fuses, etc, and hit the road. (Unlike

modern replacement techs, we actually would open a power supply and change fuses, etc, should it be necessary). Four hours later, I arrived onsite in this one-horse town, and had to park very far away as the ten parking spots in the main street was taken. Lugging the screen, and my toolkit, and more spares, to the offices, I had to wait another half-hour as the consultant was busy with clients. Just to find an Olivetti typewriter with a stalk attached with a four-inch green monitor on top of it. How their help desk interpreted this into 'Olivetti computer under warranty', I still don't know. Some questions we receive are vague and we interpret. Don't shoot the messenger!

Q : Why is there Ubuntu advantage, and what is the advantage?

A : Ubuntu advantage, as I understand it, is a re-branding of Landscape, the tool used by

enterprises to manage lots of servers with ease. It can be a real advantage if you need to repeat the same task over a hundred Ubuntu servers.

Q : My son has renamed my folders by mistake. Things like \$rrr! I need to access my files in these folders. I have tried enclosing them in quotes as someone suggested, but it does not work. It is on my Raspberry Pi with no GUI.

A : Instead of using "quotes", use the 'single' quotes.

Q : I have created a new user on my desktop for my daughter. Everything seems fine, but I do not see the desktop folder so I can copy her shortcuts into. What did I do wrong?

A : You have done nothing wrong, just log in with her user, once. This will create any

missing folders. When you create a new user, Linux creates a 'skeleton' that only gets 'fleshed out' once you use it.

Q : I have Ubuntu 18.04. When I try to use the ifconfig command, it asks me to install the net-tools package. Why is it not installed by default?

A : That package is deprecated. The preferred way is using ip show. You can have a look by running "man ip". This is more like router configuration syntax now.

Q : I am getting "error 23" when installing a clean ubuntu 16.04.5, but I don't get this error when upgrading from 16.04.1. Why?

A : Error 23 is a file transfer error. <http://manpages.ubuntu.com/manpages/bionic/en/man1/rsync.1.htm#exit%20values>



Please verify your .iso download and do a full format of your thumb drive before you burn your iso to it. I would also suggest using etcher instead of some older tools. Think of it as a CRC error on a CD Rom. Do you know how to verify SHA sums?

Q: How do I use yubuntu to transfer video to my old ipod?

A: That's Ubuntu (pronounced oo-boohn-too) though spelled with three u's – the centre u is much lower and longer than the others and not pronounced "bun". Now to the answer: there is a program called 'handbrake' <https://handbrake.fr/> that will do the heavy lifting for you. The program is very intuitive, but if you need more, feel free to look here: <https://handbrake.fr/docs/en/1.1.0/table-of-contents.html>

Q: I am a new user to Ubuntu 18.04 and I must say I am impressed. It is fast compared to windows 10, and does not turn itself on in the middle of the night to do lord-knows-what.

I have been awoken many times after midnight by the computer turning itself on. Ubuntu does not do that. I have been using Thunderbird email with the lightning calendar addon.

Yesterday, it stopped picking up my email. My email is important as I work from home. I can see past emails, but I need to see my emails for today. Luckily I have my emails on my phone, but I need to attach files from my PC. I did not delete anything as I hoard all my emails. When I go to the top, the new emails are missing.

A: Just like outlook in windows, Thunderbird sorts your mail via columns. In Thunderbird it is easy to accidentally click on one of those column headers. This will change the sort order of your emails. If you want it sorted by date, click on the word date in the header of the column and the little arrow will appear on it. Clicking it again will change the direction of the sorting. It may not look like anything is happening, but move to the top once you can see the arrow next to the word date. Thunderbird does not auto move once you change the sorting direction.

Q: How can Sweden brexit if it's not in the U.K.?

A: I think you mailed me the wrong question?

Q: I tried to install the latest Ubuntu in virtualbox. However, I get an error: Result Code:

```
E_FAIL (0x80004005). My machine is an i5 with 8GB RAM running Windows 7. All the latest updates are installed. Am I using the wrong Ubuntu?
```

A: I did a quick internet search and it seems there is a solution, turn off the VM networking. Please go read this post: <https://forums.virtualbox.org/viewtopic.php?t=33196> (I do not think wubi is a thing any more, in case someone points you in that direction before you read this.)

Q: I have installed pygame with 'apt-install python-pygame'. Yet when I type 'import pygame', I get an error:

```
>>> import pygame
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
ImportError: No module named pygame
```

I have tried various solutions from the internet, but none of them work. My python versions are 2.7 and 3.6. Why does this have to be so difficult? No wonder people just want to do porn on the internet, at least porn always 'just works'.

A: You really made me laugh there. I decided to try it myself and lo-and-behold, I ran into the same problem. I trawled Google quickly, and I see this is a common problem. I managed to get it working. (Remember you have to quit IDLE and fire it up again after installation!)

1. Install pip:
`sudo apt install python-pip`
2. Since you did not say if you were using python 2 or 3, run
`pip install pygame`
and
`python3 -m pip install pygame --user`
this will install both.

Q: I have installed 'go', via the installer, from golang.org. When I am done and I close my terminal and re-open it, then type 'go version', it says go is not installed. I tried reinstalling it, but it works only until I close my terminal. Why won't it install permanently?

A: Actually, it is installed permanently, if you pay attention to the last lines after install, you will notice: "source /home/<your profile name>/.bash_profile". Type this before typing your go commands when you open a new terminal.

Q: I have an HP laptop with 4 gigs, and, when I have firefox and LibreOffice open, the hard drive grinds all the time. I have a 2 gig swap file, and system monitor shows it uses 800MB of the file. I have read about vm swappiness, but i don't think this is the issue. How do I stop it from grinding all the time? PS. This affects my cpu usage.

A: I would need more

information here; you did not say if you have increased LibreOffice memory per object, or if you do not have 20 tabs open in Firefox, or which add-ons you are using. Web browsers are memory hungry. That said, sometimes certain add-ons will cause memory leaks too. If you are a power user in both these applications, I would rather suggest getting another 4GB memory module. Instead of looking at the graph tab in system monitor, look at the programs tab and sort it by memory usage. Here you will see what is eating your memory. Things like Firefox may have multiple instances, with multiple high memory uses. Though vm swappiness is the right path, I do not suggest changing it with only 4GB of RAM. The reason your hard drive is "grinding" is because memory is being swapped to the drive. You can also try the "noscript" add-on, and see if maybe one of your web pages is not the cause?

Q: I am running Ubuntu 16.10 and it says it is end-of-life. I prototype all my projects in PHP on this machine so PHP version is important. 'apt-get upgrade' is not working.

A: First of all, it is not a good idea to run versions that are supported for only 6 months to do any sensitive work on. I assume you want to upgrade, and you are worried your version of PHP will change. Your 'question' is in more of a statement format, so I am guessing here.

I found an article you can look at:

<https://askubuntu.com/questions/1003053/ubuntu-16-10-yakkety-wont-update-can-i-fix-it-or-should-i-get-16-04-or-17-1>

This may point you in the right direction.

Q: I installed the minimal version of Ubuntu 18.04. I can see Python, but no idle? I cannot find idle in the software centre. What happened to it? I don't want some hacked together snap thing.

A: With Python 2 being phased out, the idle package will not install. You need to run: 'sudo apt install idle3' from the terminal, and it should show up in your menu. Depending on your Ubuntu flavour,

you may see multiple icons for idle3 - use 'alacarte menu editor' to fix.

Q: I seem to be getting applications that don't integrate well, if that is the right description. Some applications just look "off" and others may have a dark theme, when I have a light theme. How can I apply one theme globally, please?

A: This is actually more complicated at second glance. The Ubuntu themes depend on the desktop - be it Gnome, XFCE, KDE or whatever. If you run Gnome, and install Krita, or some other KDE application, your distribution will pull in almost the whole KDE. KDE's client side decoration does not gel with Gnome CSD. QT applications will look differently to Gnome applications and so on. This is entirely application specific. Some applications have dark themes built in or enabled by default. This can be turned off in some, yet in others it cannot. There is no 'quick fix' answer here. You will have to look at what your application was written in and dive into the 'settings' or 'preferences'.

Q: I want to refresh my Ubuntu – like Windows. I don't want to keep any files. I have a backup on an external drive. I just want to uninstall everything.

A: First you will have to export your packages to a list for reinstallation. Secondly, copy all your hidden files to that external drive as well. Things like icons and emails, etc, are usually in hidden folders. Back up your browser favourites and passwords too; those do not back up when copying your files across. My advice then is to reinstall. Ubuntu will reinstall in a few minutes. Then you can re-install your packages, and copy your stuff back.

Q: I have bought an old printer from my company to use at home. It is multifunctional. I can print a test page fine. How do I scan? It does not install a driver like on windows. I have Lubuntu 18.04.

A: In Lubuntu, just install simple scan and you are good to go.

Printer manufacturers do not supply drivers for Linux usually, but look in your printer manufacturer's website, You may be surprised.

Q: I am trying to copy an attachment from Thunderbird to a memory stick . Every time I open the memory stick, it disappears and I cannot copy my file to it. I am new to Ubuntu, and it is very frustrating. The memory stick is a Sandisk Cruzer with 16 gigs. I have heard Ubuntu uses different file systems. This stick is not formatted to any of those. It is straight from the packaging.

A: You won't believe me, but I have seen this before. The thumb drive is just fine with fat32 or whatever it came with. The problem is the "opening" part of the thumb drive. The 'arrow' next to the name cruzer (or whatever it is named), is the eject button – and not the open button. That is why the stick disappears. Linux will 'open' the drive automatically for you, but click on the name of the drive instead of the upward pointing triangle or arrow.

Q: I don't like snaps or appimages, and have decided to learn to roll my own. I am using Ubuntu and I get errors when compiling software. I have updated my kernel but it still is not working.

My errors are:
`c1: error: code model kernel does not support PIC mode recipe for target failed.
make[1]: Leaving directory '/usr/src/linux-headers-4.15.0-36-generic'
Makefile:58: recipe for target 'all' failed
make: *** [all] Error 2`

Now I know I am missing something. What it is escapes me.

A: Install the prerequisites first:
`sudo apt-get install build-essential git dkms linux-headers-generic`

Now download your sources or clone git. Try again. If this still gives errors, have a look at the recipe, there may be a typo.

Q: I have added plank to xubuntu, and, in the preferences, added the 'clock docklet' and the 'show desktop docklet'. 'Show desktop docklet'

works, but 'show clock docklet' does not. I cannot find any options for it other than right-click digital clock or 24-hour clock.

A: I do not know what you expected, but that is what that specific docklet does, show a clock with system-time on your dock. It does not open another application or bring up the date and time settings. It purely just displays time in the dock. Not all docklets "launch" an application.



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.



Website:

https://www.gog.com/game/graveyard_keeper

Price: \$20

Graveyard keeper for Linux from GOG is a mere 230 MB download. My expectations were a time management game with a novel theme. Boy, was I wrong! Graveyard keeper seems to be a fully fledged role play game in the vein of those Nintendo classics.

First things first. When I launched the game after installation, I ended up with CPU's being maxed out and memory being maxed out. After killing the process and starting it again, I was presented with a loading screen and moderate CPU usage. Not the best start, but I decided to dive in anyway.

You are presented with a small introductory animation that tells the story. There is no way to speed it up or skip it. My button presses were redirected to > dev/null. One thing that immediately jumps out

at you is the amazing pixel art. From your hamster character (what we call hipsters here) to the building interior details, just beautiful. The music and sound effects suit the game well. The NPCs have voices! Nonsensical ones, but voices nonetheless. If you are like me, the typing whir

sounds made when NPCs "talk" drive me batty. The amount of information you are presented with is great. Interacting with NPCs fill the story out like it is supposed to.

The story unfolds at a decent pace and it's hard not to like a

game with grim humor. You harvest meat from fresh corpses, with an alcoholic skull to keep you company, and a communist talking donkey. When I saw the above, I said: "I'm in!" Your boss is the Bishop, with a completely different sense of humor. The townspeople are more like city folk who will



walk right over you if you stop in the middle of the road. Great! That said, not everyone has a dark sense of humor, and the game may not appeal to those dried-up prudes. You have been warned. To me, this all adds to the character of the game. This looks to be a long game in a sub 500 MB download. (They say dynamite does come in small packages), so prepare yourself to lose a couple of hours to this game. Do not expect harvest moon or Stardew valley, go in expecting nothing and you will be pleasantly surprised. Apparently, being a graveyard keeper is not a sad or creepy job - yes there is the human hamburger angle, but I do not think it was intended to be creepy.

You first need to get to the human hamburger part anyway, and that requires some work on your part. What I do appreciate is that the game does not hold your hand. It will tell you what to do, but how you do it is up to you.

Oh, and you cannot just do either, you need to learn how and get the appropriate tools. You have a skill tree. To unlock technologies, you need to hear about it from someone, though there are a few you figure out as

you go. All of this hinges on a 3-point system with red, green and blue crystals. They represent strength, health and intelligence.

The map is large and looks fantastic. (Did I mention the beautiful pixel art?) I did run into a bit of lag when traveling long distances, but this may have been part of the design, as it was night. With all the quests, you can sometimes forget that you actually

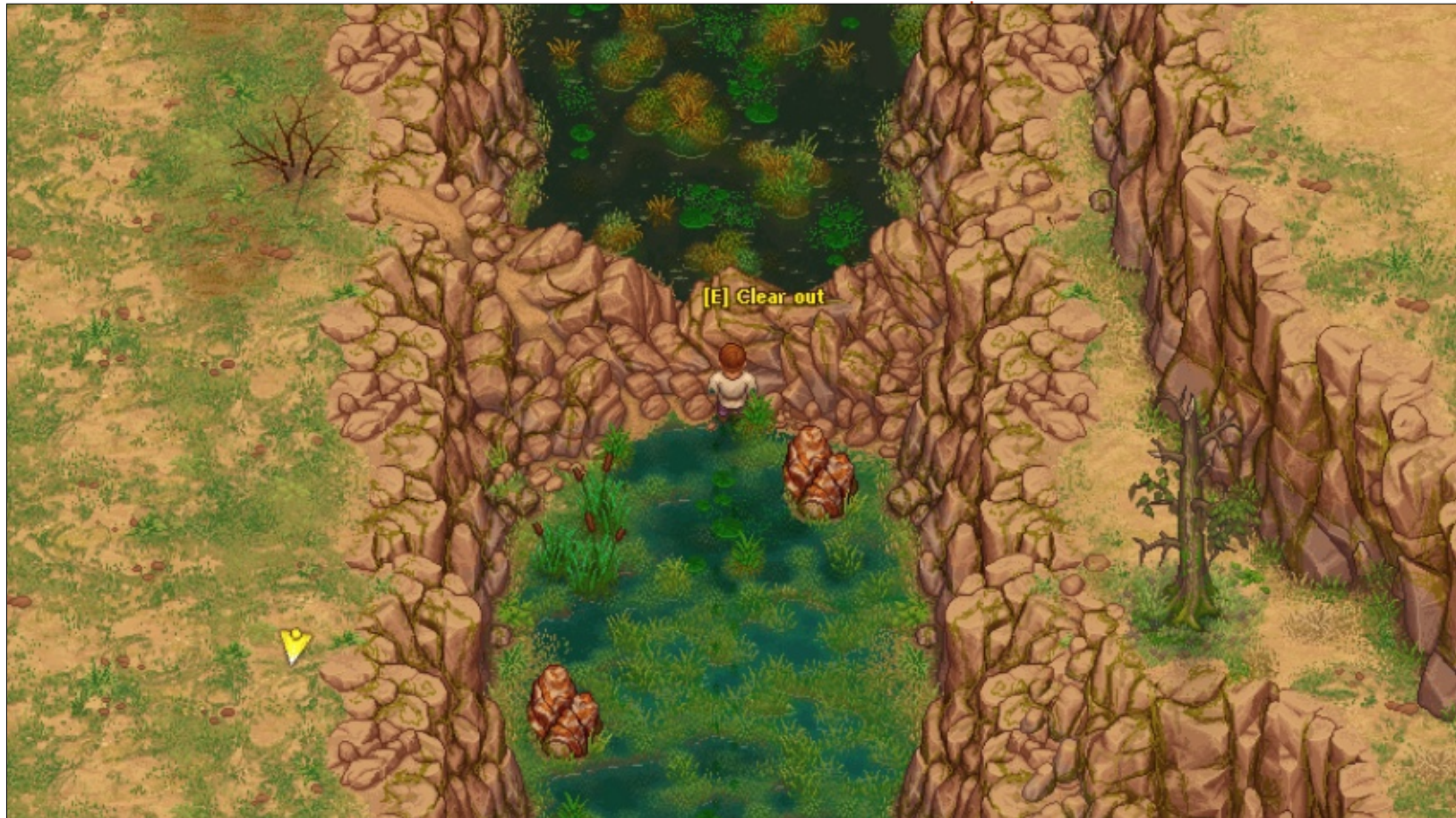
have a graveyard to run, but, all in all, way above expectations.

Now the "bad" part. People complain that the game is not complete and should not have been released. I can honestly say I do not agree. All my quests worked without hitch, I understand that some quests have time and place, and certain characters may not want to talk to you if the time and place is not right, but that is par

for the course.

The core mechanic seems to be: make money, be it by selling people burgers or organs. By hook or by crook...

Sound: 4/5
Graphics: 5/5
Game play: 4/5
Last ability: 4/5





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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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