



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #101 - September 2015



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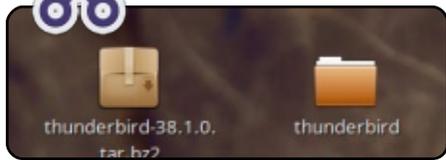
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BOX.



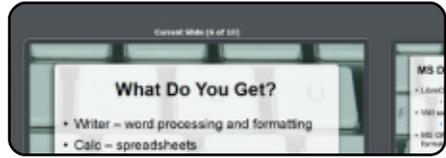
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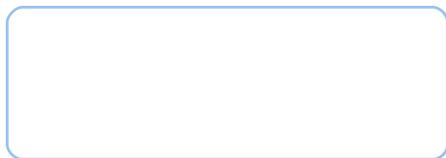
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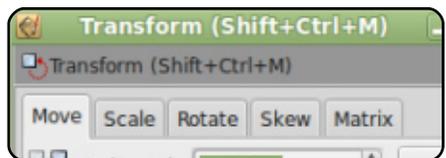
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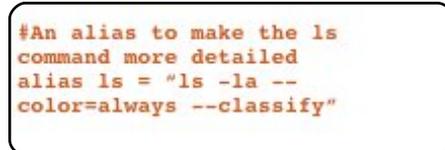


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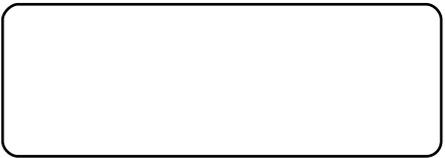
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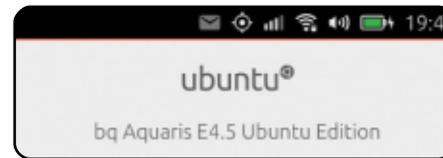
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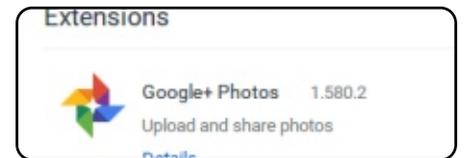
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WELCOME TO ANOTHER ISSUE OF FULL CIRCLE.

Well, I hope you enjoyed the epic 100 page **FCM#100**. With this issue, normal service resumes. We've no Python this month (Greg is getting some surgery done), but we do have the usual Inkscape, LibreOffice, the second part of creating a website with infrastructure, and a HowTo on installing a newer software version. Sometimes the repositories are a bit out of date, and it takes a PPA to get the latest, and (hopefully!) greatest version of some software. Alan Ward is showing you how it's done.

I've cheated a bit this month with my Arduino column in that there's no actual Arduino in it, but it is still electronics related. **Tron-Club** is a new monthly electronics box that I signed up for, and, I have to say, I'm impressed. I hope more people sign up for it, and it really takes off. It's a great idea to gently nudge people into electronics.

Charles discusses installing *Drupal 7* in Linux Labs, SJ discusses ChromeOS apps and addons in Chrome Cult. Also, the first viruses in his Linux Loopback section.

Things are heating up in the world of Ubuntu phones. The BQ E4.5 and E5HD are now, both, available worldwide, and the Indian online retailer **SnapDeal** is selling both BQ phones tailored to India (ie: with pre-installed Indian scopes). This is great news. Even while still in its infancy the Ubuntu phones are doing great. While there's still to be an official U.S. release (with hardware tailored to that market) the BQ phones are a great starting point.

All the best, and keep in touch!

Ronnie

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MIGRATE FROM PROPRIETARY SOFTWARE TO LINUX TO CREATE COST SAVINGS

Amongst the top IT trends of the moment is the development of Linux Containers. Financial and technical investors, Linux software programmers and customers believe that Linux Containers will transform the way organisations manage their Linux environments from deployment to maintenance. A recent survey by Red Hat and Techvalidate says that 56% of the respondents plan to use Linux containers as vehicles for rolling out web and eCommerce over the next two years. The respondents included a number of Fortune 500 companies and public sector organisations. Any development in the world of eCommerce is definitely worth taking a look.

Linux migrations aren't new. Amazon did it in 2001 and the eCommerce giant saved \$500 on software for each server at the

time. The real driver went beyond cost because Amazon could use commodity X86 servers rather than proprietary UNIX ones. This saved the firm \$50,000 per server. Nowadays the running of Linux servers has become the norm, but virtualisation and Cloud technologies have become increasingly common in comparison to the beginning of the century.

Source: <http://www.smartdatacollective.com/linuxit/340813/migrate-proprietary-software-linux-create-cost-savings>

Submitted by: Arnfried Walbrecht

UBUNTU KYLIN 15.10 BETA 1 IS OUT WITH UPDATED SOFTWARE CENTER, LINUX KERNEL 4.1 LTS

Ubuntu Kylin 15.10 Beta 1 is powered by Linux kernel 4.1 LTS and introduces updates to the most important Ubuntu Kylin-

specific packages, such as the Ubuntu Kylin Theme (ubuntukylin-theme), which has been updated to version 1.4.0, bringing new Ubuntu Kylin 15.10 logos to the Unity Greeter and Plymouth boot splash screen.

The Ubuntu Kylin Software Center has been updated to version 1.3.5, a release that includes optimizations to the list of software, the addition of a mouse hover effect, a progress bar for the installation, upgrading, and uninstallation of software, as well as multiple optimizations to the state of the progress bar and the blurbs.

The Youker Assistant tool reached version 2.0.3 with adjustments to the layout of the interface, smoother transition when switching the interface, beautified skin center, setting module, menu, and info module, revamped About dialog, animation, and skin center, an added upgrade function, and support for displaying the hardware manufacturer's logo.

Source: <http://news.softpedia.com/news/ubuntu-kylin-15-10-beta-1-is-out-with-updated-software-center-linux-kernel-4-1-lts-490282.shtml>
Submitted by: Arnfried Walbrecht

LINUX FOUNDATION'S SECURITY CHECKLIST CAN HELP SYSADMINS HARDEN WORKSTATIONS

If you're a Linux user, especially a systems administrator, the Linux Foundation has some security tips to share with you, and they're quite good.

Konstantin Ryabitsev, the Foundation's director of collaborative IT services, published the security checklist that the organization uses to harden the laptops of its remote sysadmins against attacks.

The recommendations aim to balance security decisions with usability and are accompanied by

explanations of why they were considered. They also have different severity levels: critical, moderate, low and paranoid.

Critical recommendations are those whose implementation should be considered a must-do. They include things like enabling SecureBoot to prevent rootkits or "Evil Maid" attacks, and choosing a Linux distribution that supports native full disk encryption, has timely security updates, provides cryptographic verification of packages and supports Mandatory Access Control (MAC) or Role-Based Access Control (RBAC) mechanisms like SELinux, AppArmor or Grsecurity.

Source:
<http://www.pcworld.com/article/2978136/linux-foundations-security-checklist-can-help-sysadmins-harden-workstations.html>
Submitted by: Arnfried Walbrecht

HOW UBUNTU 15.04 VIVID VERVET CAN PROVE USEFUL FOR ENTERPRISE WIFI

Every business generates data, regardless of its scale. Run a

business for a month or so and see how deep you get buried inside the data that it spawns.

The connectivity needs of an enterprise center around data. A connection is useful when it protects enterprise data and makes data transmission fast. Whether the connection is cellular or WiFi, if it fails to offer security and speed, it's not useful for an enterprise.

Ubuntu is perhaps the most preferred Linux distro. And you'd be surprised to know not only the end users, but enterprises also show a predilection for it. They have their reasons.

Enterprise Ubuntu comes with support for latest WiFi practices. This year's hottest is Ubuntu 15.04 or "Vivid Vervet." It can run on servers, and among its many features, one is OpenStack Kilo support.

OpenStack Kilo is a goldmine for enterprises of all scales. You'd keep digging into it and still won't reach to the bottom. Kilo lets an enterprise develop all types of clouds and avail all the features with the help of more than 400

embedded tools.

Source:
<http://smallbiztrends.com/2015/09/ubuntu-15-04-vivid-vervet-enterprise-wifi.html?tr=sm>
Submitted by: Arnfried Walbrecht

XIAOMI IS RUMORED TO BE WORKING ON A LAPTOP... RUNNING LINUX!

It's now rumored that the third largest maker of smartphones on the planet and a Chinese powerhouse is going to release their first-ever laptop. This is big news, especially considering the company sold over 60 million smartphones in 2014. In their homeland, Xiaomi is more popular than Apple and Huawei, and by December of 2014, they became the world's most valuable startup.

Now, they plan on expanding their line of mid-priced, mid-spec'd hardware into the realm of laptops. More specifically, Linux-powered laptops.

Some naysayers might be shaking their heads saying this will wind up another vendor making

promises that will only fall flat when the public gets product in hand and is utterly disappointed. You, however, would be wrong. Why? Simple.

Xiaomi has made a massive name for itself bringing custom versions of Android (called MIUI) to its smartphones. So, the Xiaomi faithful are accustomed to working with a variant in their interfaces. That translates to an vanishing barrier to entry for a Linux-powered laptop released by the company.

Source:
<http://www.techrepublic.com/article/xiaomi-is-rumored-to-be-working-on-a-laptop-running-linux/>
Submitted by: Arnfried Walbrecht

IBM JOINS OPEN MAINFRAME PROJECT FOR WIDER LINUX ADOPTION; NEW LINUX ONE MAINFRAMES LAUNCHED

IBM breathes new life into its open mainframe strategy with the announcement of new initiatives for wider Linux adoption

at the enterprise level. Last month, the tech giant released a new line of Linux mainframes dubbed the LinuxONE. The Emperor is based on the IBM z13 and "is the world's most advanced Linux system with the fastest processor in the industry," according to IBM.

It is reportedly capable of analyzing transactions in "real time" and has the ability to scale up to 8,000 virtual machines of hundreds of thousands of containers. On the other hand, the "entry-level" LinuxONE Rockhopper comes in a smaller package with emerging markets in mind.

Advanced software and hardware encryption features are built into both mainframes to keep client data and transactions from prying eyes. "Protected-key, available on LinuxONE, provides significantly enhanced security over clear-key technology and offers up-to 28X improved performance over standard secure-key technology," IBM said.

Source:
<http://www.franchiseherald.com/articles/37783/20150905/ibm-linux-adoption.htm>

Submitted by: Arnfried Walbrecht

DEBIAN LINUX VERSUS THE CIA

Hidden backdoors into software have long been a concern for some users as government spying has increased around the world. Now the Debian project has taken aim at the CIA and other government spy agencies with reproducible builds that aim to stop hidden backdoors.

JM Porup reports for Vice: *In response to the Snowden revelation that the CIA compromised Apple developers' build process, thus enabling the government to insert backdoors at compile time without developers realizing, Debian, the world's largest free software project, has embarked on a campaign to prevent just such attacks. Debian's solution? Reproducible builds.*

In a talk at Chaos Communication Camp in Zehdenick, Germany, earlier this month (full text here), Debian developer Jérémy Bobbio, better known as Lunar, told the audience

how the Linux-based operating system is working to bring reproducible builds to all of its more than 22,000 software packages.

Source:
<http://www.itworld.com/article/2981508/linux/debian-linux-versus-the-cia.html>

Submitted by: Arnfried Walbrecht

JIM ZEMLIN EXPLAINS HOW THE LINUX FOUNDATION SCALES BEYOND JUST LINUX

When Jim Zemlin helped to start the Linux Foundation back in 2007, it was an organization with a singular purpose: to help grow and enable the Linux ecosystem. Now in 2015, the Linux Foundation is more than just Linux, and has helped to enable multiple open source foundations and efforts, including the Cloud Foundry Foundation, the node.js Foundation, the Open Container Initiative, the OpenDayLight, and Let's Encrypt projects.

In a video interview, Zemlin discusses foundation building and

talks about why the Linux Foundation is likely to keep growing.

In some respects, the Linux Foundation now provides 'Foundation as a Service,' though that's not the the goal that Zemlin has. Given the broader efforts of the Linux Foundation in 2015, Zemlin also has no plans to rename the Linux Foundation either.

"I do think there is a lot of value in the reputation that the name Linux implies, in terms of it being the most successful open source project in the world," Zemlin said.

Source:
<http://www.internetnews.com/itmanagement/jim-zemlin-explains-how-the-linux-foundation-scales-beyond-just-linux.html>

Submitted by: Arnfried Walbrecht

UBUNTU LINUX IS NOW SUPPORTED ACROSS ALL RACKSPACE PLATFORMS

In order to provide its users with the best cloud experience possible, Canonical's Ubuntu Linux experts will provide support for

the Rackspace platform while making sure that the latest builds are always at their disposal. They promise to build, maintain, and patch the Rackspace images on the Ubuntu Certified Public Cloud infrastructure regularly.

While Rackspace will deliver its famous Fanatical Support to existing and future customers, Canonical ensures its users that the Ubuntu Linux images distributed through the Ubuntu CPC (Certified Public Cloud) program will work out of the box.

"The reason our customers choose to run Ubuntu is to get things done, quickly, easily and without worry," says Udi Nachmany, Head of Canonical's Ubuntu Certified Public Cloud program. "The less time they spend thinking about and maintaining the platform they're running on, and the more time they can spend on their core business or mission, the happier we are."

Source:
<http://news.softpedia.com/news/ubuntu-linux-is-now-supported-across-all-rackspace-platforms-491469.shtml>

Submitted by: Arnfried Walbrecht

LXD IS THE NEW PURE-CONTAINER HYPERVISOR FOR LINUX, SAYS MARK SHUTTLEWORTH

Canonical's Stéphane Graber has announced that version 0.18 of the LXD next-generation container hypervisor for Linux kernel-based operating systems has been tagged, and it is available for download.

Mr. Graber's announcement has been backed by Mark Shuttleworth, the founder of Canonical and Ubuntu, who writes on his Google+ page that LXD is now the new pure-container hypervisor for GNU/Linux systems, allowing users to test their apps at scale while running hundreds of instances of Linux OSes, including Ubuntu, Arch Linux, or CentOS.

"LXD is the new pure-container hypervisor for Linux. It's so efficient that on your laptop you can run hundreds of instances of Ubuntu or CentOS or Arch, perfect for testing your apps at scale," says

Mark Shuttleworth. "Adding per-container AppArmor now allows you to confine or shield processes from one another inside the container, just as you can on a normal machine, so it's even closer to 'just another machine.'"

Source:
<http://news.softpedia.com/news/lxd-is-the-new-pure-container-hypervisor-for-linux-says-mark-shuttleworth-491934.shtml>
Submitted by: Arnfried Walbrecht

MEIZU MX4 UBUNTU EDITION REVIEW: A FLAGSHIP LINUX SMARTPHONE

The MX4 Ubuntu Edition from Chinese maker Meizu is the second Ubuntu smartphone to reach the market. Originally released for purchase only by linked request and invitation, the MX4 is now available for regular purchase direct from Meizu's website at €299 euros (around £220). Note though, that the MX4 Ubuntu Edition is currently only available within the EU.

Canonical announced plans to port its popular Ubuntu Linux distribution as Ubuntu for Phones in January 2013, and in April this year we reviewed the first Ubuntu phone -- the Aquaris E4.5 Ubuntu Edition from Spanish manufacturer BQ.

Like the BQ phone, the Meizu MX4 is very much a device for early adopters, since Ubuntu for Phones is still in the development phase. While the €169.90 Aquaris E4.5 is a mid-range phone, the Meizu MX4 delivers considerably more computing power for €299. It runs on a Meizu-customised octa-core MediaTek MT6595 SoC with four ARM Cortex-A17 and four ARM Cortex-A7 cores, with a PowerVR G6200 GPU to handle the graphics, all supported by 2GB of LPDDR3 RAM.

Source:
<http://www.zdnet.com/product/meizu-mx4-ubuntu-edition/>
Submitted by: Arnfried Walbrecht

VALVE HITS A LINUX LANDMARK—1,500 GAMES AVAILABLE ON STEAM

Linux gaming was by no means a new endeavor, but 2013 stands as a major year for the open-source platform's gaming prospects with Valve announcing Linux-based Steam Machines and the arrival of SteamOS. When we looked at the state of Linux gaming after its 12-month Valve anniversary, we found nearly 1,000 professional, commercially distributed games available as of February 2015. But this weekend there's an even bigger numeric milestone to celebrate according to the Linux site Phoronix—1,500 Linux titles are currently available through Steam.

So while Linux on Steam hasn't been a perfect marriage to date—lack of driver support has been a continual issue, and the overall small market means little return for devs working on ports—there remains plenty for Linux enthusiasts to get excited about.

"At the end of 2013, when Valve released the beta of SteamOS everything changed," Che Dean, editor of Linux gaming news site Rootgamer, told Ars earlier this year. "After years of promoting the

various Linux distributions, we had a major gaming company not just porting their games to Linux, but actually creating their own Linux-based operating system. It was an incredibly exciting moment and a turning point for Linux users."

Source:

<http://arstechnica.com/gaming/2015/09/valve-hits-a-linux-landmark-1500-games-available-on-steam/>

Submitted by: Arnfried Walbrecht

MICROSOFT HAS BUILT SOFTWARE, BUT NOT A LINUX DISTRIBUTION, FOR ITS SOFTWARE SWITCHES

While the software is real, Microsoft isn't characterizing it as a Linux distribution, telling us that it's an internal project. That's an important distinction, and we suspect that we're not going to see a Microsoft Linux any time soon.

The Open Compute Project (OCP), of which Microsoft is a member, is an industry group that is working together to define hardware and software standards

for data center equipment. This includes designs for high-density compute nodes, storage, and networking equipment. One part that Microsoft has been working on is network hardware, in particular, software-defined networking (SDN). SDN adds a layer of software-based programmability, configuration, and centralized management to hardware that is traditionally awkward to manage. Traditional network switches, even managed ones, aren't designed to enable new policies—alterations to quality-of-service or VLANs, say—to be deployed to hundreds or thousands of devices simultaneously. And to the extent that such capabilities are present, they vary from vendor to vendor.

So why isn't the company calling this new endeavor a distribution? The big reason is that the company doesn't intend to distribute it. Again, it's an internal development that showcases the OCP approach, but it isn't a package that will be given to third parties.

Source:

<http://arstechnica.com/information-technology/2015/09/microsoft-has-built-software-but-not-a-linux->

[distribution-for-its-software-switches/](#)

Submitted by: Arnfried Walbrecht

LINUX MANGAKA MOU ARRIVES FOR ANIME AND MANGA FANS, BASED ON UBUNTU 14.04 LTS

Linux Mangaka Mou is the fifth major release of the Ubuntu-based distro for anime and manga fans. It is currently based on the latest LTS (Long-Term Support) version of the world's most popular free operating system and built around the lightweight MATE desktop environment. Linux Mangaka's sole purpose is to provide anime and manga fans with all sorts of tools for fansubbing and fandubbing.

"Today the whole Animesoft team are proud to be able to announce the final stage of Mou, which is based on Ubuntu with the lightweight MATE desktop, containing Apple and IBM PowerPC 64-bit architecture scripts. As any other Mangaka release (except One) you will be able to run on any 64-bit PC and enjoy a out-of-box

fast and complete Linux for anime & manga multimedia viewing and editing purpose," said the Linux Mangaka developers in an email to Softpedia.

Source:

<http://news.softpedia.com/news/linux-mangaka-mou-arrives-for-anime-and-manga-fans-based-on-ubuntu-14-04-lts-492217.shtml>

Submitted by: Arnfried Walbrecht

TIPS FOR IMPROVING THE LINUX DESKTOP SECURITY

One of the longest-held beliefs is that the Linux desktop comes with invulnerable and foolproof security system.

A close examination of the security system indicates that this might not be the case after all. The desktop running on Linux Operating System needs enhanced protection to provide it with excellent security and ensure that it can withstand the most vicious attacks from the latest and highly potent malware as well as viruses and spyware of today.

Before delving into the

measures you can take, it would be good to explain that one of the reasons behind the ever-increasing blatant hacking of Linux desktops is the desire to steal network bandwidth as well as the storage space. After hacking the Linux servers, the hackers are then able to spread spam, malware and scams together with phishing campaigns to all corners of the world. Life can be quieter for Linux desktop, but not all the time.

Therefore, the question that needs answers is this; what can you do to improve the protection and security of the Linux desktop?

Source:

<http://neurogadget.com/2015/09/23/tips-for-improving-the-linux-desktop-security/16034>

Submitted by: Arnfried Walbrecht



For any reader who has ever developed anything that needed to be tested or run on a system outside of the local development server or workstation, you've probably hoped for an easy way to control a test environment, or to emulate the target server. This is essentially what vagrant wants to offer. It's a tool that creates a configuration file for a server - specifications, OS, what to install, and links to the sources (such as ISOs). This is then run through vagrant, which created a VirtualBox virtual machine running everything outlined in the vagrant file.

Now...you may be asking yourself why you wouldn't just do this by hand? If you're going to need the development server on and off (such as web development, where certain combinations of software and OSes, or particular versions are common), or if you need to be able to pass the exact development environment to other people. Such as when working in a team. This way, you

can just share the vagrantfile (and, possibly, the source files), and the other team members will be up and running swiftly.

Vagrant also handles certain aspects - such as installing guest additions, enabling SSH access, and various other aspects. It also ensures the networking interface is bridged, so that you can access software running on the server from your local network. For anyone who uses a local Apache install and virtual hosts for their web projects, this is one way of creating virtual machines of your server. Running the actual software you'll encounter on deployment. If you, like me, tend to delete virtual machines the moment you're done with them because they're hogging your hard drive space, Vagrant is a perfect match. Keep the vagrantfile, and delete everything else. Space saved!

HOW DOES IT WORK?

Vagrant must be installed (it's a command-line tool), as well as

VirtualBox. In Ubuntu it's as simple as `sudo apt-get install vagrant virtualbox`. If you're using a different host OS, you'll need to check how best to install them.

Once Vagrant is installed, you can either download a Vagrantfile (there are many posted on github, or on <http://www.vagrantbox.es/>), or create one yourself. Creating one on your own is something I haven't yet done. As such, we'll focus on the more common scenario of using a pre-built Vagrantfile. If there is interest in creating custom Vagrantfiles, send me an email, and I will follow up this article at a later date. A rough scenario is using `vagrant init`, and then adjusting the default Vagrantfile to suit your needs.

GETTING STARTED

For the sake of this article, I'll be using a prebuilt Vagrantfile called "django-python3-vagrant". See the Further Reading for a link.

Download the file:

```
git clone
https://github.com/FlipperPA/
django-python3-vagrant.git
```

Then cd into the folder:

```
cd django-python3-vagrant
```

Unfortunately, this vagrantfile is geared towards utopic - which is no longer located on the Ubuntu server. So, time to edit the Vagrantfile!

On line 6, you'll want to change the line from `"django_config.vm.box = "utopic64""` to `"django_config.vm.box = "trusty64""`.

Replace line 10 with the following:

```
django_config.vm.box_url =
"https://cloud-
images.ubuntu.com/vagrant/tru
sty/current/trusty-server-
cloudimg-amd64-vagrant-
disk1.box"
```

Here, you need to run:

```
vagrant up
```

COMMAND & CONQUER

Once that command finishes running, you can log into the VM using

```
vagrant ssh
```

Upon login, you'll be greeted by some instructions on creating a django project. Follow them. However, on the runserver step, you'll need to replace 0.0.0.0:8000 with the actual IP of the server. Find this using ipconfig. For example: python manage.py runserver 192.168.1.200:8000

After that, you can access the django instance using the IP address of the server.

To stop the VM:

```
vagrant halt
```

In previous versions, this was vagrant shutdown. So if halt doesn't work for you, try shutdown.

To delete the VM:

```
vagrant destroy
```

If you run into issues, make sure of the following things:

- You're using the right IP in both

your browser, and the runserver command.

- You're running the vagrant commands from the folder that contains the Vagrantfile

Hopefully, this will be of use to anyone who need to frequently create the same (or similar) virtual machines. If you have questions, comments, or suggestions, feel free to contact me at lswest34+fc@gmail.com. Have a Vagrantfile you can't live without? Or a Vagrant tip that saves time? Email them to me, and I'll compile them into an article.

FURTHER READING

<https://github.com/FlipperPA/django-python3-vagrant> - Vagrantfile

<http://vagrantbox.es> - Prebuilt boxes

<https://www.vagrantup.com/> - Vagrant homepage



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.



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

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

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

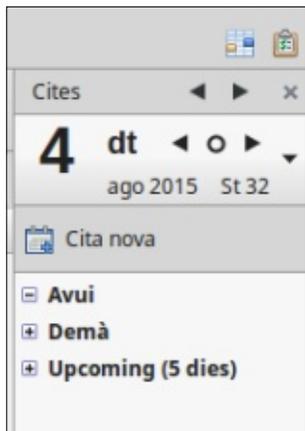
podcast.ubuntu-uk.org





Programs with a large user-base, such as Mozilla Firefox, generally benefit from quick inclusion of new releases into the Ubuntu repositories. Right now, the current version of Firefox is 39.0, and I have version 39.0+build5-0ubuntu0.14.04.1 installed from the repositories - so all is golden.

However, this is not always true. Take the other slightly less-known application from Mozilla, the Mozilla Thunderbird email client. At the time of writing, Thunderbird is at version 38.1 since July 9, 2015 while the version in the repositories is merely a 31.8, to be precise 1:31.8.0+build1-0ubuntu0.14.04.1.



My personal gripe against Thunderbird's version 31 is that it does not yet automatically include the calendar plugin, unlike version 38. So I would like to upgrade this program directly, instead of relying only on the Ubuntu repositories.

In the following description, we will see how to do this for Thunderbird, although the basics are extensible to other applications. As a sidenote, there is actually an Ubuntu Wiki page on installing new versions of Mozilla Thunderbird:

<https://help.ubuntu.com/community/ThunderbirdNewVersion>.

Unfortunately, the information within is quite out-dated, since it refers to Ubuntu versions 10.04 and 10.10. But there is an interesting indication that is current in many respects, and that can be borne in mind: going beyond the repository version is specifically "NOT recommended by the Ubuntu Mozilla team due to interoperability concerns." The operation is classified as "Medium difficulty, medium safety", so may be outside of many users' comfort

zones.

So, what are our options to get access to the newest and greatest version of an application such as Thunderbird?

The first one that comes to mind (for an old-timer, at least) would be to download the source code and compile the program ourselves. This is definitely possible, open source being... open, with the source code readily available. However, it is also definitely going to mean downloading not only the source code, but also any tools necessary to do the compiling and linking (developer version of libraries, the compiler itself), and may require some navigation through library dependencies. So, while this path is certainly possible and results in an application that is perfectly integrated into our current system, it is perhaps not to be recommended unless we already enjoy software development in the C or C++ languages.

So, if we wish to avoid

compiling from source code, we have at least two options to obtain a pre-compiled application in binary (executable) form.

One option is using the very same apt package system we are so used to, to perform installation. This means adding a supplementary repository to those we already have - Canonical's main, universe, multiverse repositories and so forth. This new one is hosted by the Launchpad system, and has its homepage at <https://launchpad.net/~ubuntu-mozilla-daily/+archive/ubuntu/ppa>. As its name says, this repository holds daily builds of the most recent version of Thunderbird. So, as root, let us add this repository to our list with:

```
sudo bash
apt-add-repository
ppa:ubuntu-mozilla-daily/ppa
```

Now, refresh repository content lists with:

```
aptitude update
```

HOWTO - INSTALL A NEWER VERSION

and consult the version of Thunderbird that is available:

```
aptitude show thunderbird-trunk
```

Please note the name of the main package for Thunderbird in this daily repository is not 'thunderbird', but 'thunderbird-trunk'. This is so we can distinguish between the two versions. In my case, I get:

```
41.0~a1~hg20150519r17960.2447  
18-0ubuntu1~umd1~trusty
```

Wow! We now have a version 41.0 available to us! And the version on the Mozilla web page is only up to a measly 39! So let's test it out. In a terminal, type the command:

```
thunderbird-trunk
```

And watch it start up. The About dialog states quite clearly that this is, in fact, version 41.

However, it also states clearly something that should be a word to the wise: "Daily is experimental and may be unstable". This is something I noticed when it was incapable of authenticating against my Gmail server -



something which any version of Thunderbird has done with flying colors for the last many years. Luckily, the developers have had the good idea to have this daily version not operate directly on the existing mail data, so there is little chance of it trashing all those messages you have on your hard drive.

It is clear, however, that playing around with a daily version should be seen as working with beta grade software, at best. It is good enough to test out - but certainly not for production machines, or for ordinary users' peace of mind.

The final option to download a stable version of Thunderbird is simply to consult the Download section of the project's website, at

<https://www.mozilla.org/en-US/thunderbird/all/>.

Here, we find pre-compiled binaries for all three major desktop operating systems: Windows, OS-X and GNU/Linux. For the latter, make sure to choose the version corresponding to your preferred language. Also choose between 32-bit or 64-bit. If you are not sure which version of the Linux kernel you are running:

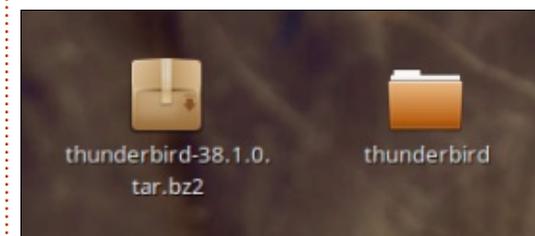
```
uname -a
```

and if you see "x86_64" in the information returned then this is a 64-bit kernel. "i386" or "i686" means a 32-bit kernel.

The file that is downloaded should be a compressed archive

with the tar.bz2 extension. At the time of writing, the latest version was thunderbird-38.1.0.tar.bz2, rather less than the 41.0 numbering of the daily version.

Once downloaded, just click on the file and it will open in whatever archive compression/decompression utility is associated with this file extension. The exact program invoked will depend mostly on the desktop manager used, but, in many cases (Unity, Gnome, Cinnamon), it would be the Gnome archive manager file-roller. Once the compressed file is open in the archive utility, extract it, for example to the desktop. The archive utility can be closed.



You should now have a folder on the desktop simply called "thunderbird". This contains a large number of files, among which the main file (i.e. the Thunderbird program itself) is unsurprisingly also named "thunderbird".

HOWTO - INSTALL A NEWER VERSION

In any terminal, run

```
Desktop/thunderbird/thunderbird
```

and, voilà, the new version of Thunderbird should start up. It is worth noting that it should directly access your existing configuration and message files, which are not in this folder but in the hidden folder ~/.thunderbird. If you are not running Ubuntu in English, but in another language, simply substitute the correct name for your desktop (Bureau/thunderbird/thunderbird, etc.)

If this doesn't work, the advantage of using a terminal to launch the newly-downloaded program is that any error messages will be visible for perusal.

For best results, it is recommended to run a fairly recent version of *Ubuntu. The most recent LTS version (now 14.04) or Linux Mint equivalent (17.2) should be fine with recent versions of Thunderbird. Otherwise, it is very possible that some library files are not in sufficiently recent versions for

today's Thunderbird to work.

To install this program to benefit all system users, best practice would involve moving it to the /opt directory. This needs to be done as root. So:

```
sudo bash
cd ~/Desktop
mv thunderbird /opt/
```

Now, let's rename the existing version of Thunderbird, and link to the new version.

```
cd /usr/bin
mv thunderbird thunderbird-ubuntu
ln -s /opt/thunderbird/thunderbird
```

From this point on, all references to the Thunderbird program should point towards the newer version: this is the one that gets started when using the links in the menus, dock or status bar. The old version can still be accessed by typing the command

```
thunderbird-ubuntu
```

Needless to say, if the user should not be satisfied with the

new program, it can safely be uninstalled and rolled back to the earlier version by issuing the following commands:

```
sudo bash
cd /usr/bin
rm thunderbird
mv thunderbird-ubuntu
thunderbird
rm -r /opt/thunderbird
```



EXTRA! EXTRA! READ ALL ABOUT IT!

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



HOW-TO

Written by Elmer Perry

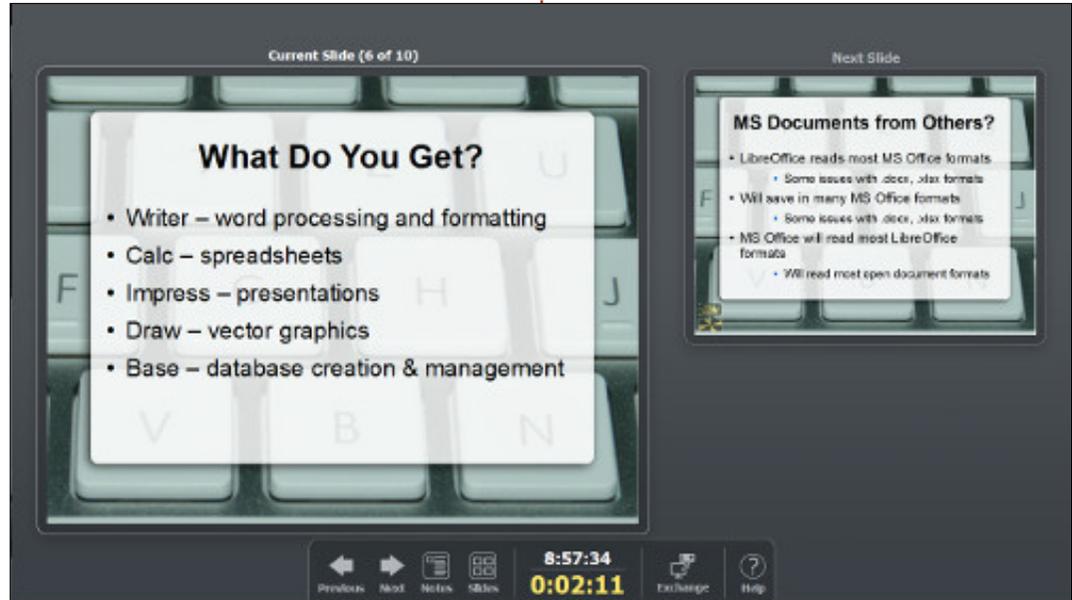
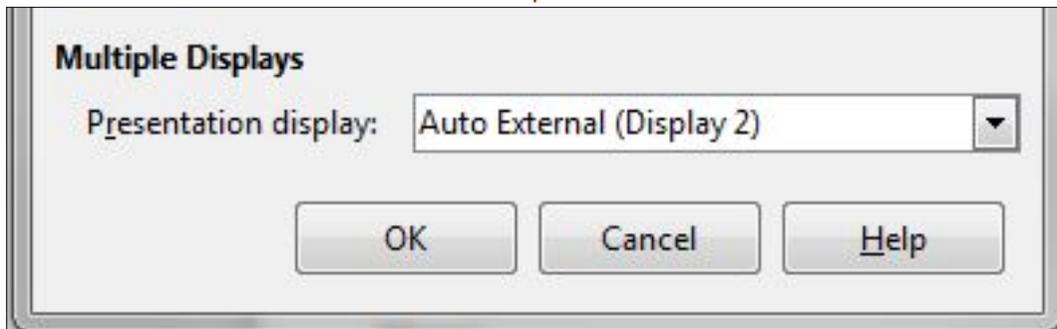
LibreOffice Pt.53 - Presenter Console

At least twice a year, I teach installer training for my company. During training, I show several presentations. Of course, my choice of presentation programs is LibreOffice Impress. As you might already know, one of the reasons is the Impress Remote app for Android, but even when I don't use Impress Remote, I still use Impress for a feature called the Presenter Console. The console is a control panel for the person giving the presentation, with tools to view notes, move between slides, and keep track of the time you have spent on a presentation.

When I give my presentations, I am on a laptop connected to a big screen or projector. Any time you have dual monitors, you can set your system to use the Presenter

Console. Make sure your second monitor is not set to mirror the first monitor. You want the second monitor to extend the first monitor. The good thing is the extended mode allows each monitor to have the best resolution for that monitor. Making the second monitor an extension of the first also allows you to use the Presenter Console.

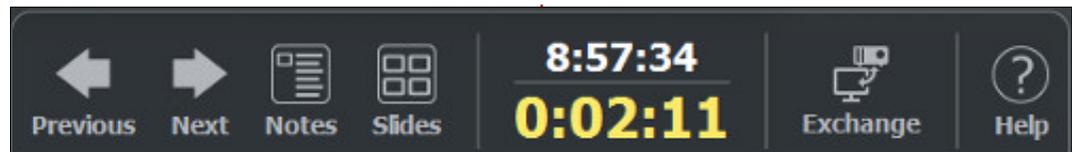
Before you begin, make sure that the slide show is set to show on the second screen. You can check this in the menus, Slide Show > Slide Show Settings. Under Multiple Displays, select the monitor you want the presentation to appear on. This option is available only when you have multiple monitors. This setting does not save with the presentation document but in the



Impress settings.

When you start your presentation (Slide Show > Start from first Slide), the Presenter Console will appear on your non-presentation monitor. The default mode shows the current slide, the next slide, and the control bar. The current slide keeps you up to date on what is showing on the presentation screen, so you don't have to look behind you or away

from your notes to see what your audience sees. This is especially important when you have animations that bring your points up one at a time on the slide. The next slide shows you the complete, finished slide that comes after the current one. The control bar is the main component of the console. In the bar you can change between the different modes, switch slides, view notes or slides, or swap the views on the monitors.



The previous and next buttons move you through the slides. The previous button moves the presentation to the start of the previous slide. The next button moves you forward to the next animation, or, if there are no more animations on the current slide, the next slide. I hardly use these. I usually use the spacebar to move forward and the backspace to move backward. The choice is yours, and these buttons work great if you want to keep your hands on a mouse.

The Notes button switches the display to notes mode. In notes mode, you get a smaller version of the current slide, and the next

slide moves to a position underneath it. The right side of the console displays any notes for the current slide. This mode is very helpful when you have a lot of notes in your presentation, which I highly recommend you do when giving a presentation for the first time. The + (plus) and - (minus) buttons allow you to change the size of the text in the notes. Ideally, your notes will fit on the screen, but sometimes, you need more notes. Adjusting the size allows you to find that happy spot between readability and max coverage. You get a scroll bar when the notes are too long to fit in the note window. The close button closes the notes and returns you to the default mode.

The slides button on the control bar pops up a display of all the slides in the presentation. You can use the scrollbar to scroll through your slides until you find the one you need. When you select a slide, the slide shows on the main presentation monitor. Click the close button to return to the previous view mode (default or notes). This comes in handy when someone brings up a topic you have already discussed, and you want to go back to the slide where the topic was discussed. I find myself doing this from time to time, and the slides screen is much faster than using the previous button.

In the center of the control bar are the clock and timer. I use the timer to keep track of how much time I have spent on the current presentation. Am I moving too fast? Do I need to slow down? Do I need to get on with it? The clock is also useful for the same thing. Gotta be finished by noon? Knowing what time it is without looking at your watch or phone sure does help. The clock and timer are helpful for keeping on schedule.

The Exchange button allows you to swap the monitor displays. Not sure why you would want to do this, but it is there as an option. I guess if, in a pinch, you got your displays backwards, you could



swap the monitors to get things on the right displays. Or you needed to show the presenter screen to your audience? I'm really not sure why it exists, but it is there should you ever need it. I'm sure it will save someone somewhere some embarrassment some day.

The last button on the control bar is the Help button. Clicking Help brings up a list of all the keyboard shortcuts for the console. When giving presentations, I find the podium is

not big enough for me to have a mouse, and I'm not very fond of laptop mousepads. Keyboard shortcuts make it much easier to navigate. There are a few, but it's not so many that you can't memorize them. For next and previous, I recommend you find the pair that works best for you and use it. I use the spacebar for next and backspace for previous. The forward and backward relationship makes them easy for me to remember. The right and left arrows also make sense for the

same reason. The CTRL-1 (standard view), CTRL-2 (notes view), and CTRL-3 (slides view) makes it quick and easy to switch between the different views. B blacks out the screen. Use it during breaks, or to divert the audience's attention elsewhere. Press B again to bring the screen back. W does the same thing, only it whites out the screen. Press ESC at any time to end the slide show. If you know the number of the slide you want to jump to, enter the number and press Enter. Home takes you to the first slide, and End takes you to the last one. G and S grow and shrink the size of the notes text, and H and L move the cursor in notes view backward and forward.

The Presenter Console in Impress is a handy control center for anyone giving a presentation. The screen always lets you know the current status on the presentation monitor and shows you the next slide in the presentation. The control bar gives you access to all the features of the console. The notes mode shows you the notes for the current slide. The slides mode allows you to quickly switch to any slide in the presentation. The help button gives you a reminder of the

keyboard shortcuts for the console. The Presenter Console keeps the presenter in control of the presentation.



Elmer Perry's history of working, and programming, computers involves an Apple][E, adding some Amiga, a generous helping of DOS and Windows, a dash of Unix, and blend well with Linux and Ubuntu. He blogs at <http://eeperry.wordpress.com>



Now that that our Linux VM is built, we must add security for better server protection; this will be accomplished by using the Linux firewall capabilities. Afterwards, we will install a web server and set up additional security on the web server.

Today we will focus on the Linux firewall. We will use iptables, standard Linux firewall functionality.

A Firewall is basically a set of rules. As best practice, we'll use the "deny access" default rule – this means that unless specified otherwise, an incoming network packet will be dropped.

External access to our server will be allowed under:

- SSH - for remote control
- HTTP -server web pages (our website)

Right now, anybody can try connecting to our server via SSH. Obviously, that will not be possible without the private key; however, we'd like to limit who can even try

to connect to our server – this is just best practice and limits access to any additional potential hacks.

For example – let's suppose you live in the US – it's probably a good idea to allow SSH connections only from the US (any SSH connection attempt from outside the US is not legitimate – it's not you!!! - so it should be banished).

In addition, we may decide we will not do business with specific countries – we will block any web access (HTTP) from these countries. In my example, I will choose Canada (note here – this is only an example, there is absolutely nothing wrong with Canada what.so.ever – I am just choosing a country which is a Democracy, this way, I know I won't get into trouble!!!).

Please note that checking the incoming country **is not foolproof** – the source connection can spoof the IP address (or just VPN into a server from an unblocked country). Anyway – this is good protection against automatic bot scanners

and will definitely help keep hackers away.

Without getting into too much detail, the firewall rules can be set for incoming, outgoing, and forward connections.

Since we are not forwarding anything, we will just set rules for incoming (most important), outgoing (more later on why) and ignore forwarding (by default forwarding is disabled in the kernel anyway).

STEP BY STEP NOW

Quick reminder: only sudo (or root) can set up firewall rules. To switch to root, I recommend typing:

```
sudo su
```

1 – RESET ANY FIREWALL RULE AND DROP ANY INCOMING CONNECTIONS:

Most distributions come with some type of firewall rules set up

by default. (Centos & Suse do for sure – not totally sure about Ubuntu).

We will reset any rules so we can start from scratch:

```
iptables -F
iptables -X
```

And by default DROP any incoming connections:

```
iptables -P INPUT DROP
```

2 – ALLOW LOCAL CONNECTIONS (TO LOCALHOST):

```
iptables -A INPUT -i lo -p all -j ACCEPT
```

```
iptables -A INPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
```

3 – BLOCK INCOMING CONNECTION IF IT ORIGINATES FROM A SPECIFIC COUNTRY:

HOWTO - WEBSITE WITH INFRASTRUCTURE

There are several ways to check the country-of-origin of an incoming connection:

- iptables geoip
- loading country blocks into ipset

iptables with geoip is based on xtables-addons, which is an extension of iptables. This works pretty well. However, it's not really a "standard" - meaning xtables is not delivered with some distributions (requires compile from sources & install). For example, I was unable to make this work with Arch Linux on ARM architecture (not saying it is not working, just saying I was unable to make it work – big difference!).

ipset is a companion application to iptables – it can load in-memory ranges of IP addresses, and iptables can leverage ipset to test if an IP is within this range.

As geo-localization, I will choose ipset – which seems to be available as a packaged install to any distribution I have tried so far.

```
sudo apt-get install ipset
```

Let's summarize what we want to achieve here:

- Get the IP range block we want to

forbid (country based).

- Load that range into ipset.
- Add an iptable rule which checks if source is within that range (Canada in our example).
- If yes, block.
- If not:
 - Allow if target is HTTP (a web page).
 - If target is SSH, we must also check country of origin is USA (same as above – with ipset).

I hope you follow me here!!!

IP blocks by country can be found here:

<http://www.ipdeny.com/ipblocks/data/aggregated>

We'll get the blocks of US and Canada – either download the file or use wget:

```
wget
http://www.ipdeny.com/ipblocks/data/aggregated/ca-aggregated.zone
```

```
wget
http://www.ipdeny.com/ipblocks/data/aggregated/ca-aggregated.zone
```

Now load the blocks into ipset's memory:
Create an ipset bucket called myset_CANADA:

```
ipset create myset_CANADA
hash:net
```

Load the blocks corresponding to Canada into myset_CANADA:

```
for i in (cat ca-
aggregated.zone); do ipset
add myset_CANADA $i; done
```

Same for US block range:

```
ipset create myset_US
hash:net
```

```
for i in (cat us-
aggregated.zone); do ipset
add myset_USA $i; done
```

Now we'll block anything coming from Canada (conjunction of iptables & ipset):

```
iptables -A INPUT -m set --
match-set myset_CANADA src -j
DROP
```

If the rule above is hit, the connection is dropped (-j DROP does that) and we exit the firewall.

4 – IF WE GET UP TO HERE IN THE FIREWALL CHAIN

We can accept any HTTP incoming connections:

```
iptables -A INPUT -p tcp --
dport 80 -j ACCEPT
```

If rule above is hit (meaning "true"), the request is accepted (-j ACCEPT) and we exit the firewall.

5 – IF WE GET TO HERE

The source is not coming from Canada and it's not an HTTP request. If the request is not SSH, drop the request and exit the firewall:

```
iptables -A INPUT -p tcp ! --
dport 22 -j DROP
```

6 – IF WE'VE GOT THIS FAR

It is a SSH request (and not from Canada). Let's check if the source country is allowed (USA in our example).

Before accepting, let's write into the system log that access to port 22 has been granted. We will log this information into /var/log/messages (default system log file). Logging is important for security reasons – by running statistics on /var/log/messages you will find out who tried to access your system. Note that we do not track who has connected but who tried to connect:

```
iptables -A INPUT -j LOG --
log-prefix "Accepted SSH " --
log-level 7
```

```
iptables -A INPUT -m set --
match-set myset_USA src -j
ACCEPT
```

Just in case we missed anything, any connection arriving to the command above will be dropped (remember – we drop everything by default unless specified otherwise):

```
iptables -A INPUT -j DROP
```

It's not mandatory – but we can add some additional security to the above rules.

Let's imagine that somebody really wants to hack your system by trying every combination of RSA key possible – that is called a brute-force-attack. No worries – with a 10K RSA key, it is probably not possible (note the word probably – when talking security, you cannot ever be sure!).

There is something we can do about that – if a specific IP tries to connect more than x times (let's make it 5) to our server on port 22, we can temporarily ban that IP address for a few minutes – let's

make it 5 (300 seconds). So this means that an attacker can potentially try 5 combinations every 5 minutes. As you probably understand, brute force will not work at this pace!!!

Below, we're telling iptables to keep track of connections to port 22 for 300 seconds. If a (failed) hit count gets to 5, the connection is denied for the next 5 minutes:

```
iptables -A INPUT -p tcp -m
tcp --dport 22 -m state --
state NEW -m recent --set --
name DEFAULT --rsource
```

```
iptables -A INPUT -p tcp -m
tcp --dport 22 -m state --
state NEW -m recent --update
--seconds 300 --hitcount 5 --
name DEFAULT --rsource -j
DROP
```

Then, follow these with the same block-rules as before:

```
iptables -A INPUT -j LOG --
log-prefix "Accepted SSH " --
log-level 7
```

```
iptables -A INPUT -m set --
match-set myset_USA src -j
ACCEPT
```

```
iptables -A INPUT -j DROP
```

Careful – this rule also applies to yourself!

More about logging and checking who tried to access the system...

This command will display any SSH connection attempt to your system:

```
cat /var/log/messages | grep
"Accepted SSH"
```

You will quickly get a hefty output (“quickly” means minutes of server up-time), which will not be easy to read.

This revised version is probably more useful and will give the list of unique IP attempts – sorted by number of connection attempts:

```
cat /var/log/messages | grep
"Accepted SSH" | awk -FSRC=
'{print $2}' | awk '{print
$1}' | sort | uniq -c | sort
-n
```

A quick explanation of above command:

- It outputs the content of the file /var/log/messages.
- It keeps only lines where the keywords “Accepted SSH” exist.
- It grabs the text following the keyword SRC= (IP address of incoming connection).
- It sorts the list.

- It gets only the unique IPs, but counts the number of occurrences of each unique IP.
- It sorts descending as numbers (sort -n).

The goal of this article is firewall and security. However, I strongly believe that security and scripting go hand-in-hand. Logging intrusion attempts is great but not using the data is useless. As you can see, a quick shell command was able to provide very useful information – extremely quickly. I can now, for example, ban the topmost 10 IPs who tried to log in to my system.

The following command will ban the IP 10.10.10.10 by inserting the rule on top of all rules (-I INPUT 1):

```
iptables -I INPUT 1 -s
10.10.10.10 -j DROP
```

Have fun and please make sure not to ban... yourself!

7 – OUTPUT RULES:

Many times, firewalls will enforce rules only for incoming connections – meaning they'll allow wide-open output traffic.

HOWTO - WEBSITE WITH INFRASTRUCTURE

This is not a good practice – imagine that a hacker gets to your computer and is able to install server software which could then create a tunnel via a random port to the attacker's server and therefore provide full access to the attacker.

We will also close this loophole. Basically we will allow outgoing access to:

- SSH (for our remote access), this is TCP port 22.
- HTTP and HTTPS (for web pages), these are ports 80 and 443.
- DNS (so our requests can be resolved!), this is port 53.

You probably got the point:

- By default, DROP any output connections, unless we specifically tell otherwise.
- Allow connection to localhost (the server itself).
- Allow SSH, DNS, HTTP & HTTPS.

```
iptables -P OUTPUT DROP
```

```
iptables -A OUTPUT -o lo -p all -j ACCEPT
```

```
iptables -A OUTPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
```

```
iptables -A OUTPUT -p tcp --dport 22 -j ACCEPT
```

```
iptables -A OUTPUT -p udp --dport 53 -j ACCEPT
```

```
iptables -A OUTPUT -p tcp --dport 53 -j ACCEPT
```

```
iptables -A OUTPUT -p tcp --match multiport --dports 80,443 -j ACCEPT
```

```
iptables -A OUTPUT -j DROP
```

Let's put all this together...

First build the block of IP addresses. Run all below as root (or sudo):

```
apt-get install ipset
```

```
wget http://www.ipdeny.com/ipblocks/data/aggregated/ca-aggregated.zone
```

```
wget http://www.ipdeny.com/ipblocks/data/aggregated/us-aggregated.zone
```

Now let's clean all firewall rules:

```
iptables -X
```

And make sure all rules were really deleted – you should see this:

Then add the firewall rules in a text file (see box on next page).

In order to test this out, I would

recommend the following:

- Use wget to get the blocks of IPs, and keep the files.
- Copy / paste the code above to a shell file (text file with extension .sh and make it executable with `chmod +x [filename]`).
- Run the file. For my example, I'll call this file `/usr/local/sbin/firewall.sh`

You should now have the firewall fully loaded and operational.

IMPORTANT – iptables -F resets the firewall and locks your ssh session out!

When you run the file, your terminal will be “locked”. This is

because we reset the firewall by blocking all rules by default. Just try connecting again to iceberg from another terminal. If it works – you should be all set, but, if you cannot, stop and restart the VM from the Digital Ocean panel. After the restart, the rules are not loaded, so you can fix that problem: For example, I allowed the US IP blocks because I live in the US, did you load the right blocks of IPs from where you live?

I will now suppose everything worked well – we will then set both scripts to run at startup.

In ubuntu 14.04, edit and add both files to `/etc/rc.local` (shown below).

```
#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the exec
# bits.
#
# By default this script does nothing.

sleep 10
/usr/local/sbin/firewall.sh

exit 0
```

HOWTO - WEBSITE WITH INFRASTRUCTURE

Note the sleep 10 – we're telling iceberg to wait 10 seconds before running our scripts – this is to ensure that the network is up & running before we set up the firewall.

I know a few of you may find the sleep 10 not optimal and would rather use upstart's dependencies rules. I personally think it is too much trouble and safe enough (even if somebody connects in those 10 seconds, he'd be locked by the iptables -F) – not to mention that upstart seems to be end-of-life software (even Canonical decided to switch to systemd in newer Ubuntu versions – this doesn't mean I support or not systemd, I am just noting Canonical's decision).

Anyway, during your next reboot, you should be automatically all set, with a system pretty well protected against intrusions.

If you'd like to confirm the scripts have been properly executed at startup, as root run this:

```
iptables -L
```

```
#!/bin/bash
# Load the ipset rules
ipset create myset_CANADA hash:net
for i in $(cat ca-aggregated.zone); do ipset add myset_CANADA $i; done
ipset create myset_USA hash:net
for i in $(cat us-aggregated.zone); do ipset add myset_USA $i; done
iptables -F
iptables -X
# Input rules <== this is comment
iptables -P INPUT DROP
iptables -A INPUT -i lo -p all -j ACCEPT
iptables -A INPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
iptables -A INPUT -m set --match-set myset_CANADA src -j DROP
iptables -A INPUT -p tcp --dport 80 -j ACCEPT
iptables -A INPUT -p tcp ! --dport 22 -j DROP
iptables -A INPUT -p tcp -m tcp --dport 22 -m state --state NEW -m recent --set --name DEFAULT --rsource
iptables -A INPUT -p tcp -m tcp --dport 22 -m state --state NEW -m recent --update --seconds 300 --hitcount 5 --name DEFAULT --rsource -j DROP
iptables -A INPUT -j LOG --log-prefix "Accepted SSH " --log-level 7
iptables -A INPUT -m set --match-set myset_USA src -j ACCEPT
iptables -A INPUT -j DROP
# Output rules <== this is a comment
iptables -P OUTPUT DROP
iptables -A OUTPUT -o lo -p all -j ACCEPT
iptables -A OUTPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
iptables -A OUTPUT -p tcp --dport 22 -j ACCEPT
iptables -A OUTPUT -p udp --dport 53 -j ACCEPT
iptables -A OUTPUT -p tcp --dport 53 -j ACCEPT
iptables -A OUTPUT -p tcp --match multiport --dports 80,443 -j ACCEPT
iptables -A OUTPUT -j DROP
```

and you should get the firewall rules displayed on the screen.

Next month, we will install Apache (Web server) and secure Apache.

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HOW-TO

Written by Mark Crutch

Inkscape - Part 41

After last month's special celebratory detour, we return to finish the subject of aligning and positioning objects in Inkscape. We've already seen a variety of approaches, from grids and snapping through to tiled clones and the Align and Distribute dialog, but we still have two dialogs to consider. They both live near the bottom of the Object menu: "Transform...", and "Arrange..." ("Rows and Columns..." if you're still using 0.48.x).

The Transform dialog provides a more precise approach to moving, scaling, rotating and skewing objects when compared with simply dragging the selection handles using the mouse. In the world of SVG, every object can have a transformation applied to it. Rotate or skew an object, then look at it in the XML editor and you'll see that there's no obvious "rotate" or "skew" attribute, but rather a single "transform" attribute which holds a matrix that defines the cumulative effects of any transformations you may have applied. The details of this matrix

are a little too mathematically intense for this series, but it's enough to know that each object can have its own matrix applied, and that a single matrix can combine the effects of moving, scaling, rotating and skewing into a single set of numbers. The Transform dialog is essentially a more user-friendly way of tweaking that matrix.

On opening the dialog from the menu, or using the CTRL-SHIFT-M shortcut, you'll be presented with a simple interface featuring a

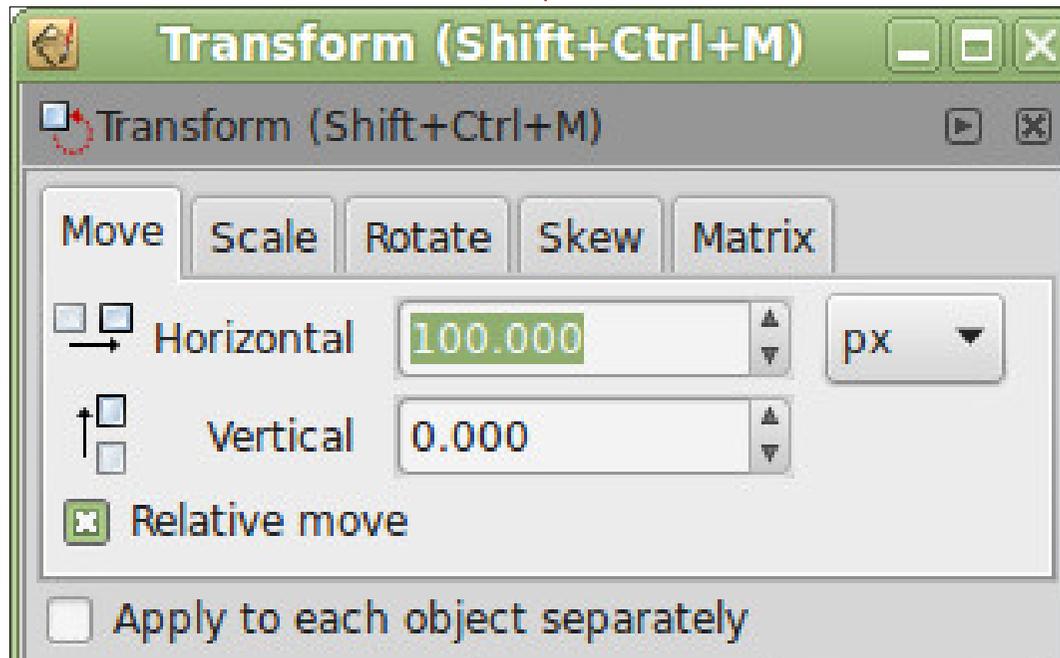
handful of tabs, each with just a few fields. This dialog has seen little change between 0.48 and 0.91.

The fields on the Move tab allow you to move your selected objects by a specific distance, when the "Relative move" checkbox is enabled. Disable this, and you can move your objects to absolute x and y coordinates. In addition, the current absolute coordinates are displayed in the fields. With 0.91, just about every spinbox in Inkscape lets you enter

simple calculations, so there's a good argument for never enabling this checkbox in that version. Want to move your shape 50 pixels to the right? Just append "+50" to the number in the "Horizontal" box, then hit Return and watch the field update with the newly calculated value.

Positions and movements are based on Inkscape's own coordinate system which has the positive y axis running upwards from the bottom of the page (remember, this is the opposite of SVG's coordinate system, which has the origin at the top left, with the positive y-axis running downwards). Similarly, the selected objects are placed such that the bottom left corner of the bounding box is at the specified coordinates, with no option to use a different corner, or even the center of the box as the reference point.

The "Apply to each object separately" checkbox is effectively the opposite of the "Treat selection as group" checkbox in



the Align and Distribute dialog. If you select multiple objects and leave this un-checked, then the transformation will be applied as though all the objects were grouped. With it checked, each object is individually transformed. When relatively moving things, there's little difference, but, for an absolute move, it results in all the items being placed at the same position on the page. It's also particularly relevant when using the other tabs, where the results can differ significantly due to the state of this checkbox. Consider the Rotate tab: there's a huge difference between rotating a group of separate objects and rotating each object individually.

The Scale, Rotate and Skew tabs in this dialog really need no additional explanation as the fields are all straightforward to understand. It's important to note, however, that only the current tab's values are used when the Apply button is clicked. You can't queue up a collection of movement, rotation and skewing to apply as a single operation, but instead have to press the button with the Move tab to the fore, then again with the Rotate tab selected, and so on.

On the subject of the Rotate tab, there has been a slight change with version 0.91: this release adds buttons to determine whether rotations should be clockwise or anti-clockwise. The corresponding field accepts both positive and negative values in either release of Inkscape, so the buttons just make the existing functionality more obvious, rather than adding anything new.

The last tab, Matrix, allows you to directly manipulate the six values in the SVG matrix transformation. With the "Edit current matrix" checkbox enabled, you can modify the transform

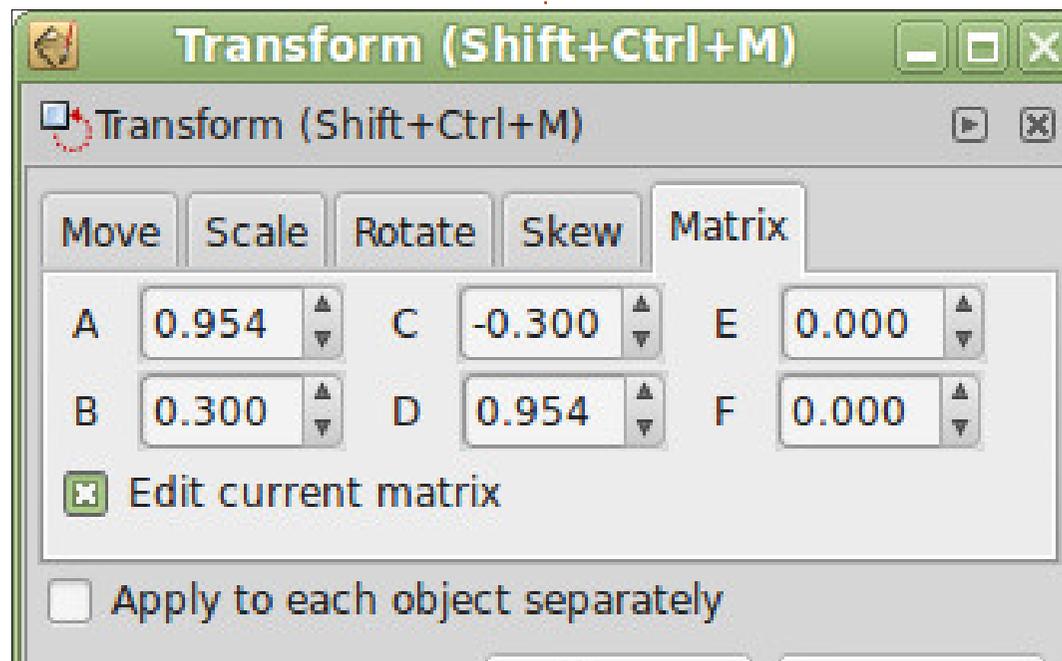
that's currently being applied to the selected element, if there is one. With this unchecked, any changes you make in this tab will be mathematically combined with the existing matrix to produce a new, cumulative matrix. If you are mathematically inclined, and wish to play around with this tab, I recommend reading the SVG specification for coordinate systems and transformations: <http://www.w3.org/TR/SVG/coords.html>

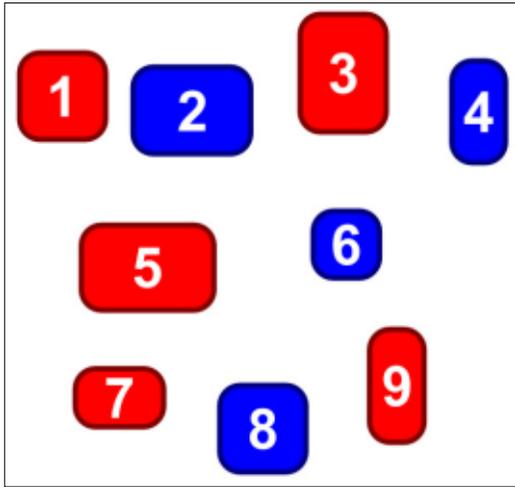
It's worth noting that SVG's transform attribute does allow for a series of individual translate(), scale(), rotate(), skewX() and

skewY() functions to be used, rather than just the matrix() operation that combines them all. From an authoring perspective, it would be far nicer to store a 45° rotation in the SVG file as rotate(45), rather than matrix(0.707,0.707,-0.707,0.707,0,0), but there's no option in Inkscape to do that, unfortunately.

The last feature we'll consider in this part of the series is the dialog that can be found via Object > Rows and Columns... (0.48) or Object > Arrange... (0.91). The latter lays the interface out a little more neatly and adds a second tab, so I'll describe that version. 0.48 users should be able to work out the differences in the first tab, but you'll just have to look on in envy when I describe the Polar Coordinates options in the second.

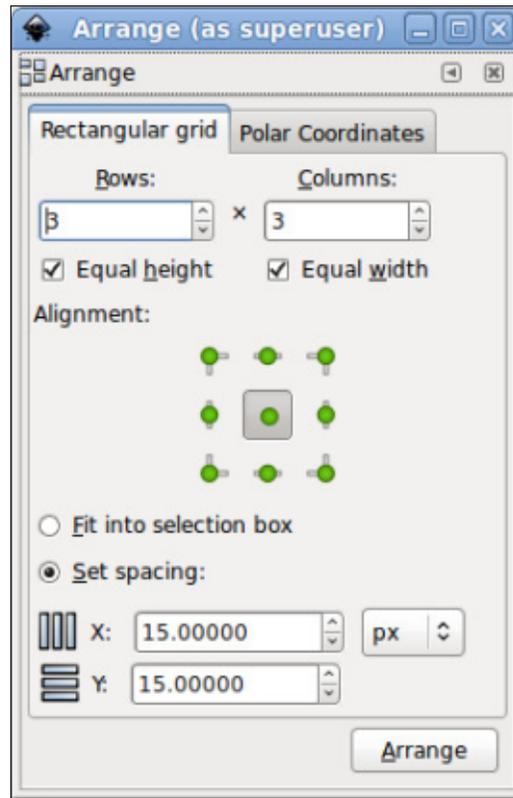
Let's start by creating a few objects to arrange. I've deliberately used different sizes, and semi-randomly placed them. I've numbered them from left to right, top to bottom, to make it easier to see which object moves where – once they're arranged using the dialog.





On selecting these nine objects and opening the dialog, it's possible to set various combinations of rows and columns, ranging from 1x9 to 9x1. These fields are dynamic: as items are added to, or removed from the selection, the rows and columns will change; similarly as each field is manually altered so the other will change to ensure that you don't end up with an impossible combination for the number of elements that are selected. In this example, I've set the arrangement to 3 rows by 3 columns.

You can think of this dialog as creating a number of conceptual cells which are arranged in rows and columns, then your objects placed within them. They're "conceptual" in that they're never



really created, or drawn, on the canvas, but serve as a tool to more easily describe how Inkscape arrives at its final layout. The height of each cell is determined by the height of the tallest object within it; if checked, all the rows will be the same height, equal to the tallest object in any of the rows. An analogous calculation is carried out to

determine the width of each cell, too.

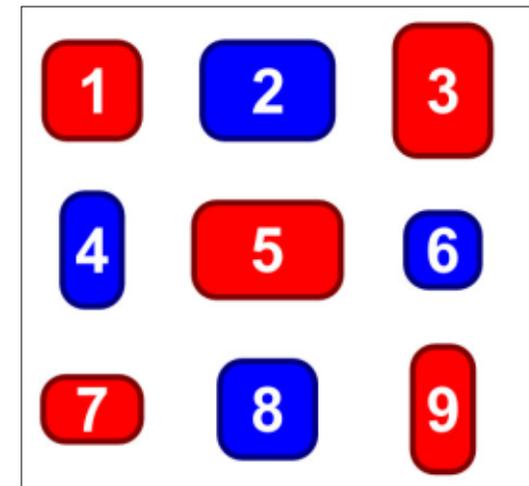
With the dimensions of each cell calculated, they are now distributed into their final positions. If the "Fit into selection box" radio button is active, they are evenly distributed to fit within the dimensions of the original selection's bounding box. This gives you the ability to distribute the objects within a specific area by carefully positioning two opposing corner objects.

Alternatively you can select the "Set spacing" option, and enter values for the X and Y fields. In this mode the cells will be arranged with the specified amount of space between the columns (X value) and rows (Y value). These numbers can be negative if you want to make the cells overlap. Note that 0.48 allows these numbers to be specified only in pixels whereas 0.91, as you can see from the screenshot, has a pop-up menu from which to choose different units.

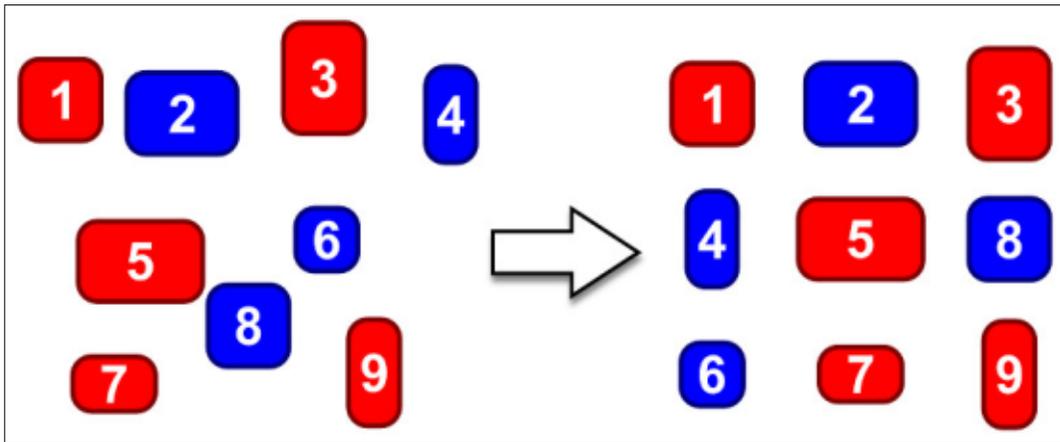
With these imaginary cells conceptually placed on the canvas, it's finally time to move your objects into them. The "Alignment"

buttons let you define how to place each object within its cell, allowing for any of nine relative positions (though you'll probably just use the center button most of the time). Note that 0.48 had the same nine possibilities available, but laid out as a pair of three-option radio buttons which specified the horizontal and vertical alignments separately.

Having distributed our virtual cells, and aligned the objects within them, the result is something like this:

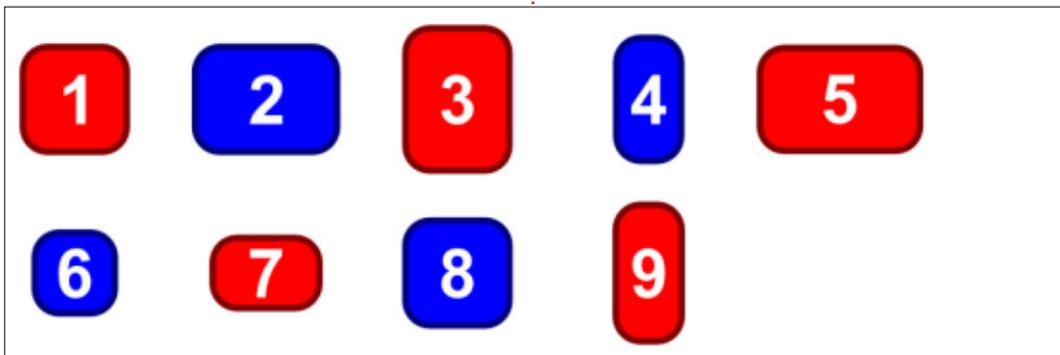


It's important to understand how Inkscape chooses the order for the arrangement. Whereas other parts of the application use an object's z-index or selection order, this dialog is only concerned



with the placement of the objects on the canvas. They're ordered from left to right, top to bottom, and laid out in the same way. You can see this effect quite clearly if I move the blue "8" object up a little, leaving its z-index the same, then reapply the arrangement:

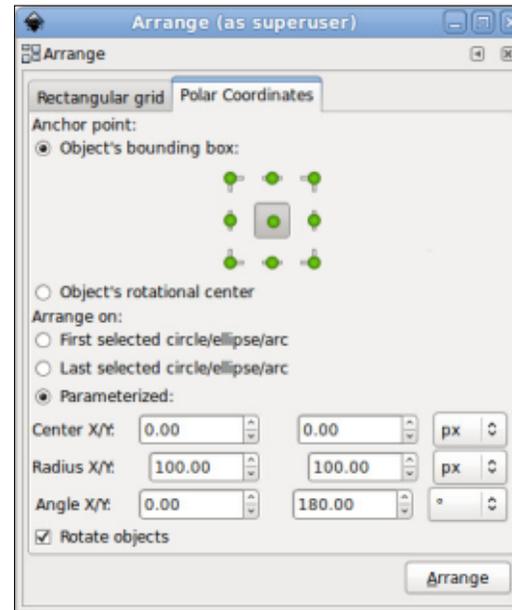
Because the objects are laid out from left to right, top to bottom, some arrangements can lead to an empty space in the bottom right corner. Here are the same nine objects in a 2x5 arrangement:



Note that there's no way to get the blank space to be anywhere other than the bottom right cell. If you want a different alignment you'll have to manually alter the results afterwards. It's also not possible to have more than one blank cell – the dynamic nature of the Rows and Columns fields will stymie any attempts. Trying to put these nine objects into a 2x6 arrangement, expecting six objects on the top row, and three on the bottom, just leads to the same result as before and the fields

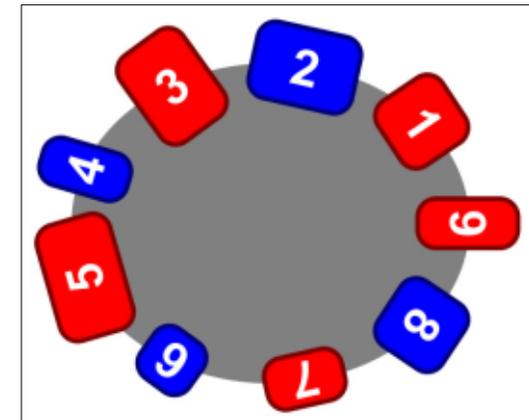
adjusting themselves to 2x5.

The second tab of this dialog allows you to place objects in a polar arrangement. You can either draw a circle, ellipse or arc as a guide on which to place your objects, or you can enter the parameters for such a shape within the dialog itself.



The easiest way to do this is to draw a target shape (circle, ellipse or arc) that you wish to place your objects on. Send it to the bottom of the z-order, then select all the objects you wish to arrange plus the target itself. Ensuring that "First selected..." is active, click the Arrange button. With our previous

selection of nine rounded rectangles, and a grey ellipse as the target, the result is something like this:



As you can see, the objects have been arranged anti-clockwise, starting from the top right. To make them run clockwise from the top left, flip the ellipse horizontally first. For clockwise from the bottom right, flip it vertically. For anti-clockwise from the bottom left, flip it both horizontally and vertically before creating the arrangement.

If the target object is your only circle, ellipse or arc in the selection, it doesn't really matter whether you use the "First selected..." or "Last selected..." option. If you do have more than one, however, you should ensure that you select the target first,

then add everything else to the selection ("First Selected...") or select everything else, then add the target to the selection ("Last selected...").

If you don't wish to create an additional object on the canvas to use as a target, the "Parameterized" option reveals additional fields (shown in the screenshot) to let you specify the details of the target arc to use. Realistically, it's almost always easier to draw an arc on the canvas to use as the target. You'll get visible feedback as to where your objects will be placed, and you can simply delete the arc once your arrangement is done, if you don't want it left in the drawing.

The specific position of each object on the target shape is set using the "Anchor point" section in the top half of the dialog. You can specify one of nine positions on the object's bounding box – so choosing the top-left button, for example, would position the objects such that the top-left corner of each individual bounding box is placed on the target. The center button is the most common choice here, and is the one I used for the previous image. An

interesting alternative is to use the "Object's rotational center" option. This will position each object so that its rotational center is placed on the target, allowing you a finer degree of control over the placement of each individual object.

The "Rotate objects" checkbox determines whether your objects will be rotated when they are arranged, or left with their original orientation. The previous image was made with this checked; had it been left un-checked, all of the positioned objects would have retained their original orientation, such that the numbers would all have been the right way up.

There's a small bug that you may have to work around: whilst writing this article, I found that the Polar mode would occasionally place all my objects on top of each other, rather than spacing them out around the target shape. I was able to reliably fix this by undoing the placement, then shifting the target object up (SHIFT-Up arrow), then back down to its previous position (SHIFT-Down arrow), before repeating my arrangement attempt.

That concludes our look at the



myriad ways in which you can arrange and position objects within Inkscape. Amongst them there should be something to suit most artistic requirements. From snapping to grids, tiled clones to polar arrangements, Inkscape has far more ways to position your shapes than initially meets the eye.



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

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



OK, so this article isn't actually about the Arduino itself, but it is about electronics. So it's certainly relevant.

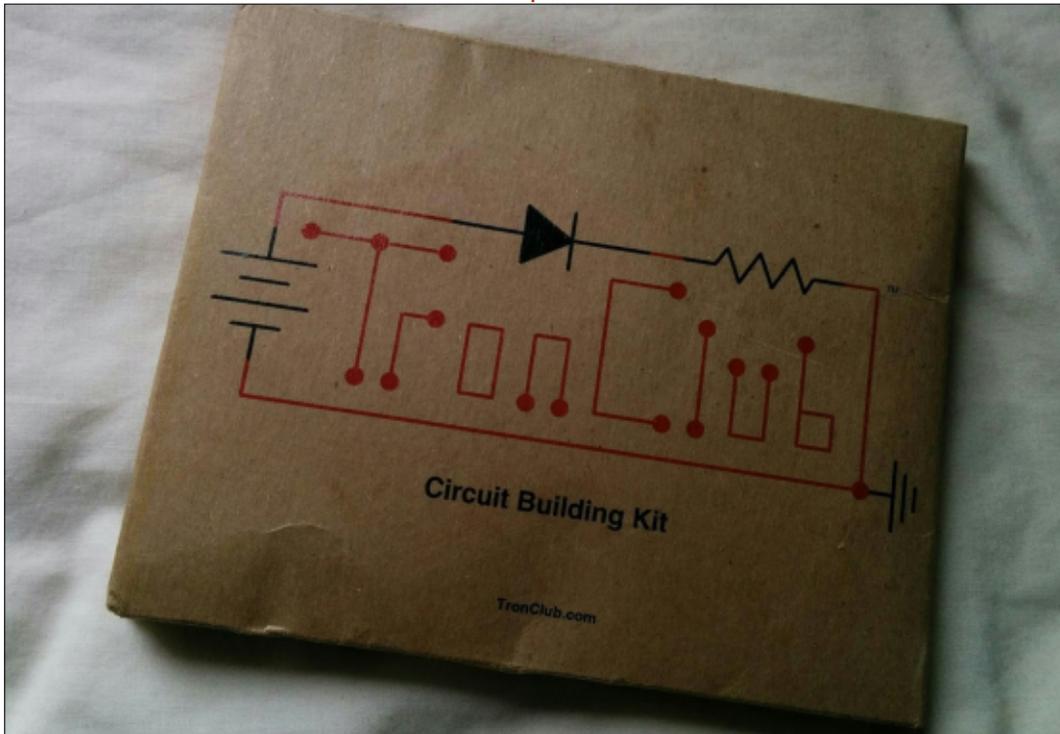
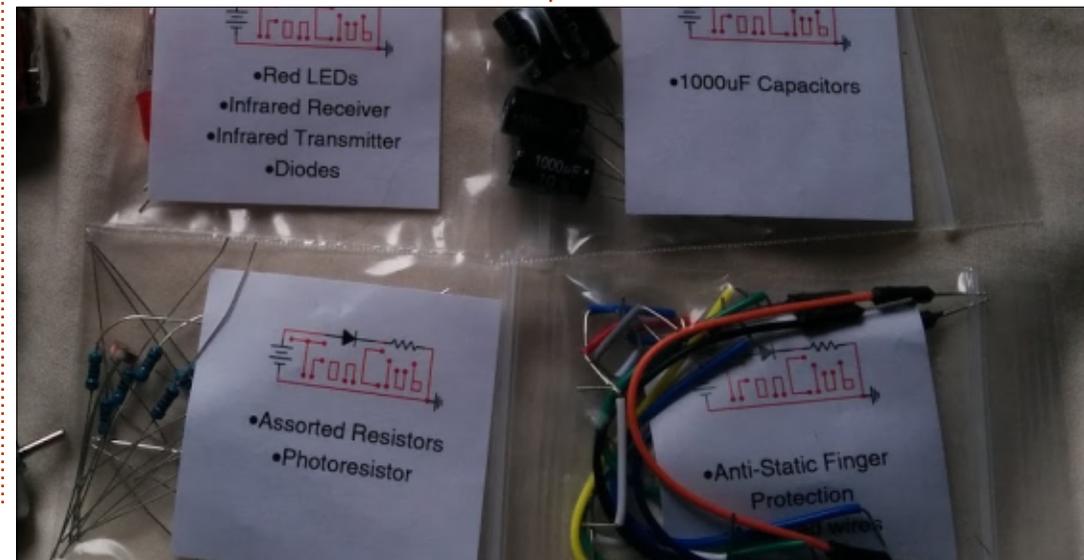
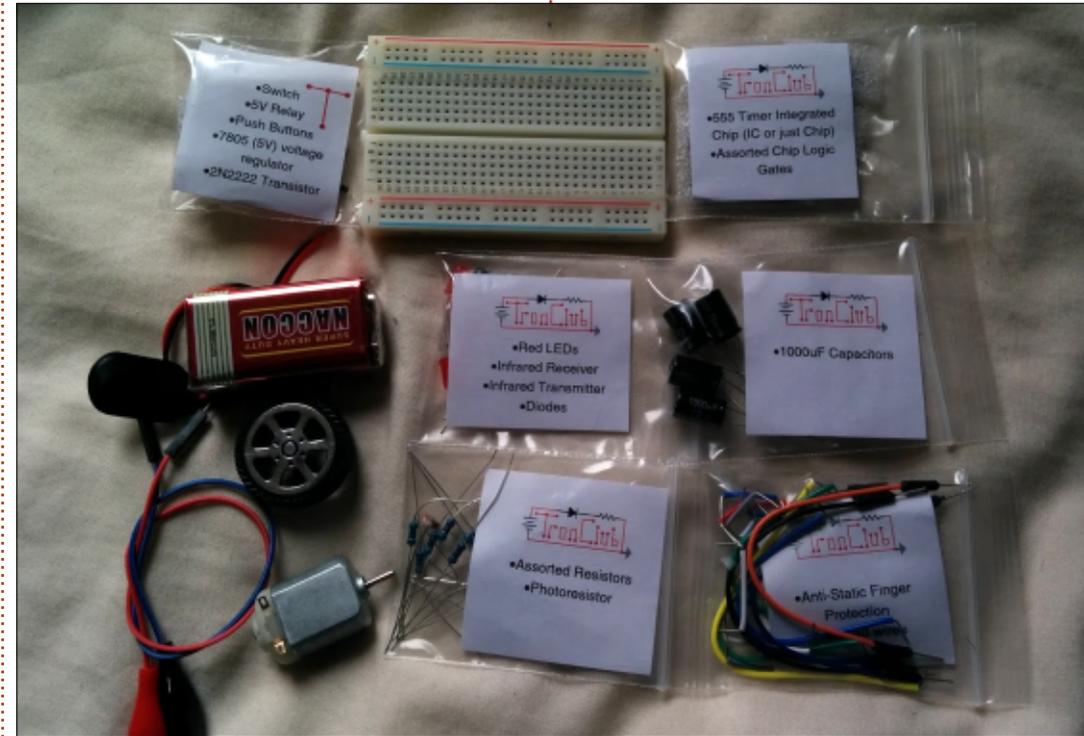
Weekly/monthly boxes are nothing new. There are boxes for everything from crafts to snacks, and everything in between, but Tron-Club is doing something quite unusual: a monthly electronics box.

TRON BOX ONE

The website (<http://www.tronclub.com/>) is a bit confusing at times, but I decided to take the plunge and give it a go anyway.

The prices are quite reasonable at £11 per month (€14/\$14) not including postage.

The first box comes with a whole bunch of components and a small booklet. Everything from a



HOWTO - ARDUINO

small motor, resistors, capacitors, chips, battery, and even a small plastic wheel are at your disposal. Of course, you also get a small breadboard for plugging everything into.

The whole idea of the box is to ease you into electronics and guide you on your way to creating ever more complex circuits.

THE BOOKLET

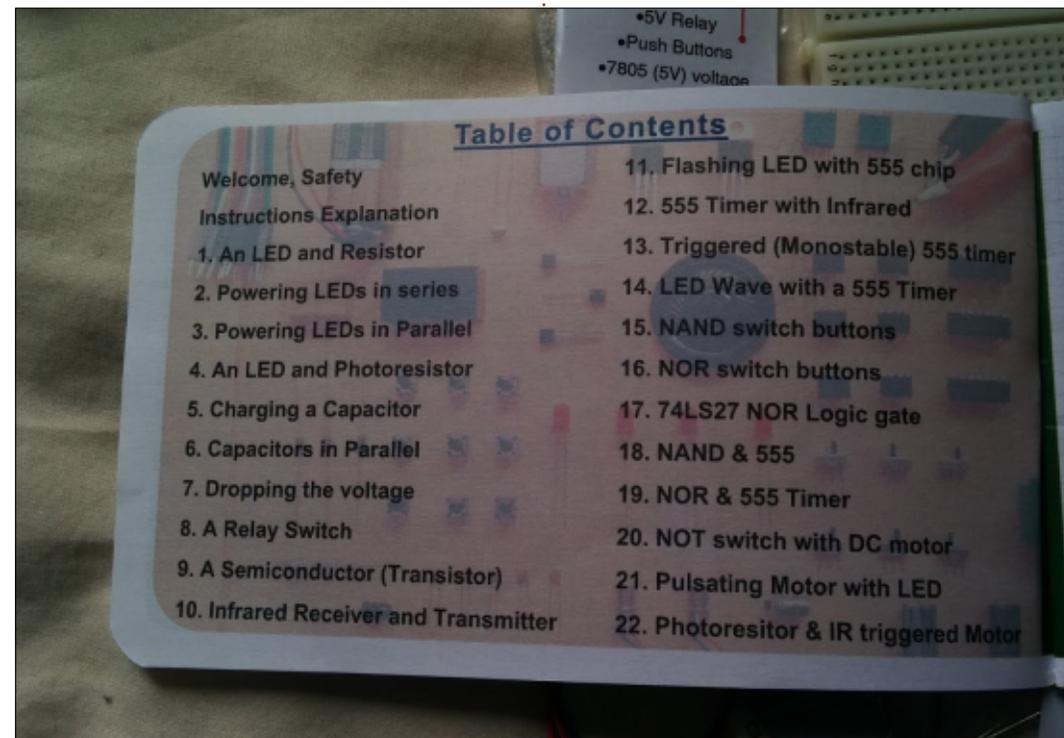
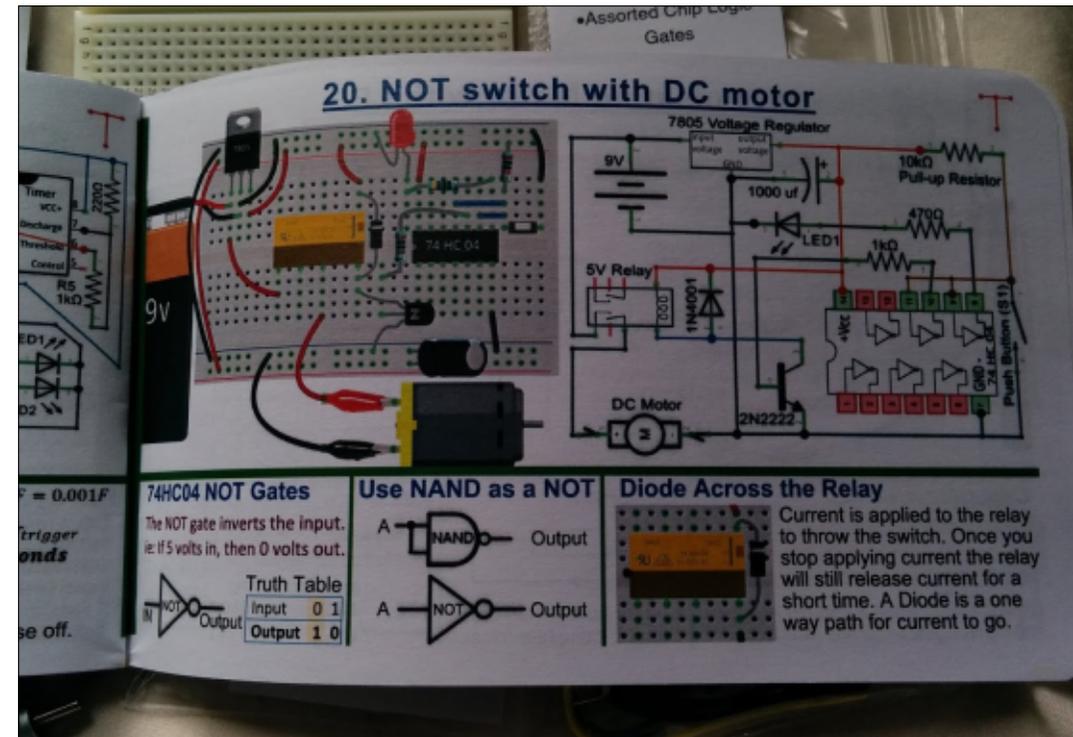
The booklet is your guide. It contains 22 circuits that you can build using the given components.

It starts off easy with some basic resistor and LED stuff, working up to relay switches, a basic IR transmitter/receiver circuit, all the way to logic gates with a 555 chip.

The little booklet is well done, showing both a breadboard layout (easy on the brain) or a proper circuit diagram (for the real nerd in you). Below them are a couple of information boxes that give you help and advice.

CONCLUSION

Sure, you can buy a big pile of



components for £11 these days, but the good thing about Tron-Club is that it's also trying to build a little community around it where you can get help and advice. The forum (<http://www.tronclub.com/forum/forum-4.html>) is a bit sparse at the moment, but this is the first box, and I'm sure it'll grow over time.

Definitely worth it, in my opinion, and I look forward to the next box.

Site: <http://www.tronclub.com>



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



Since the Chrome OS is so streamlined and minimal, apps and extensions are needed. The Google Ecosphere improves with these little programs that operate in the browser:

An app can be defined as software that has a dedicated user interface but it is simpler in nature than a typical desktop program.

An extension is a program that provides functionality, but has no or little dedicated user interface.

Both of these programs operate within the browser. Apps will stay locally on the SSD. Extensions are tethered to your Gmail account and will appear on any Chrome browser.

Since we use Linux, we naturally look for the free app or extension. However caution is needed when choosing apps or extensions. Oftentimes, you trade your online privacy for “free apps or extensions.” So, in that sense, they are not free. You can add apps and

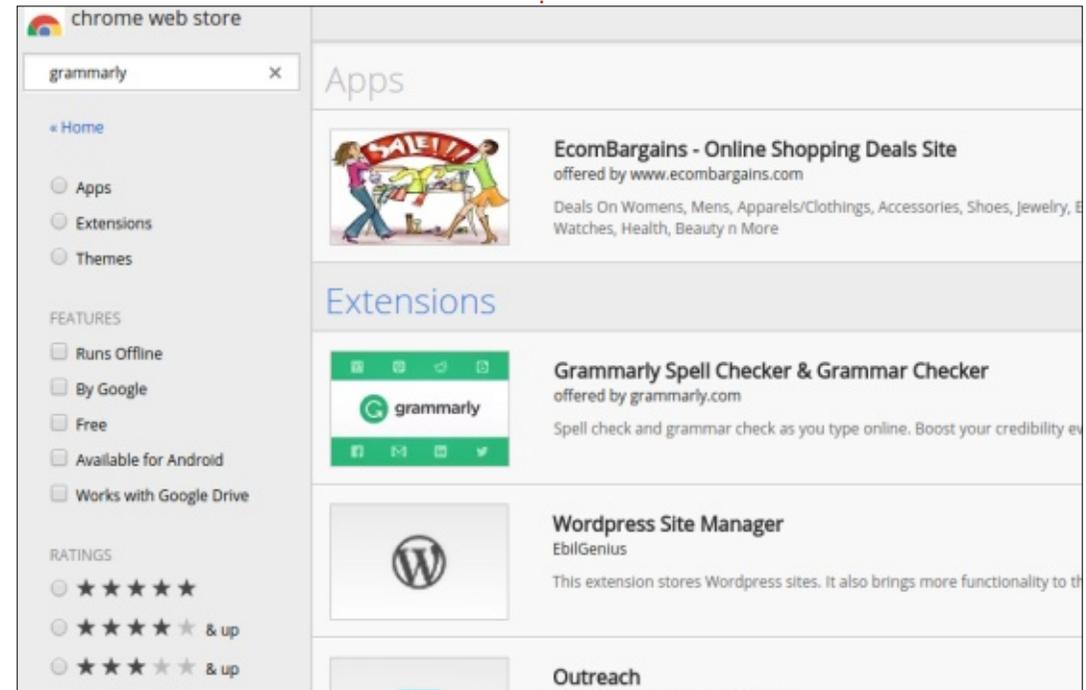
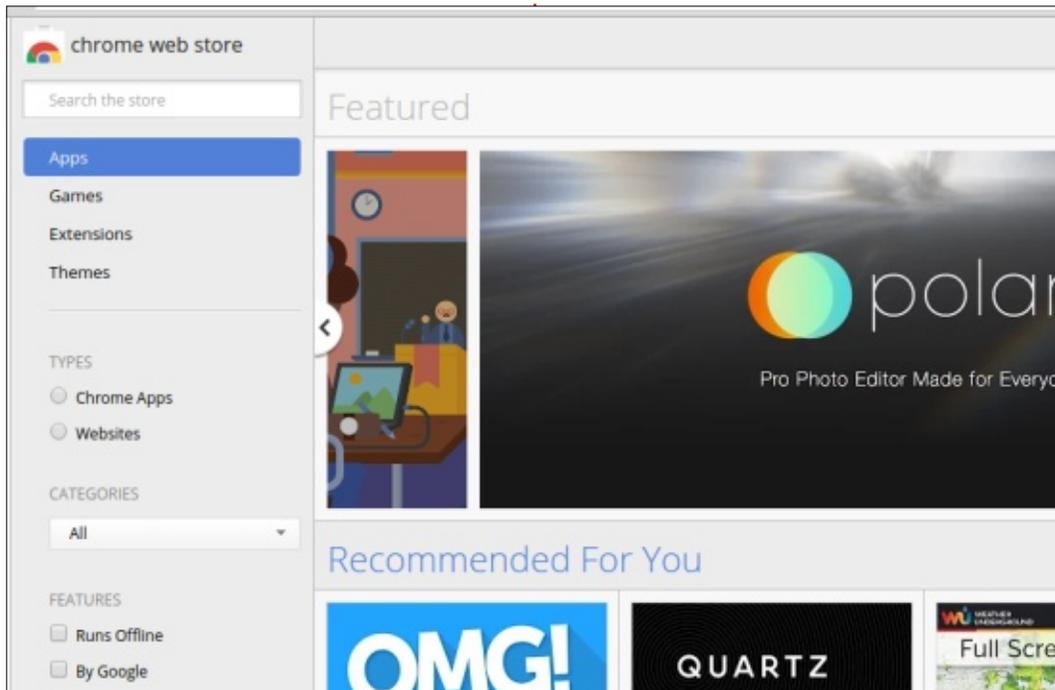
extensions only through the Chrome Web Store. Some of these programs will work offline, but not all.

Let’s take a look at how we add an app or extension to the Chrome OS. The easiest way is to access the Chrome Web Store via https://chrome.google.com/webstore/category/apps?utm_source=chrome-ntp-icon.

Once you are at the webstore you can query the type of

extension or app needed. Let’s start with an example. I entered grammar in the search bar. A list of apps and extensions populated on the screen. I chose Grammarly extension based on the high number of positive reviews.

However it turns out Grammarly does not work with Google Docs! I wanted this extension to interact with Google Docs. So I choose to remove. The best way to remove this app is by going through the menu in the Chrome Browser



HOWTO - CHROME CULT

selecting more tools and then extensions.. The extension list will populate. I then clicked the trash can by Grammarly. I then added the After the Deadline extension from the webstore.

The apps and extensions will detail the interaction level it will have on the Chrome OS. I have varying apps on my Chromebook to improve my productivity. I have more extensions than apps. The Chrome Show suggested One Click Extension Manager as a means of corralling the various apps at a time. I find this extension manager extremely useful.

The authors of the apps or extensions have an interface to help resolve issues online in the

reviews section. However not all authors respond to this feature. That is why I tend to use the more popular and reviewed programs in the app store. Occasionally it would be worthwhile to pay for an extension or app if it offers better functionality.

Next month I will look into maintaining online privacy with a

Chromebook and the varying methods to ensure it.



GUIDELINES

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

RULES

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

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

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

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

document.

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

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

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

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

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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.

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The Southern California Linux Expo has grown in size and scope since it began, and given this trend we will be in a new venue as of 2016.

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Featured Speakers:

Jono Bacon

Jon "maddog" Hall

Cory Doctorow

Bryan Lunduke





This article is an updated version of some notes I made years ago about installing Drupal on Ubuntu Server.

From the Drupal website: "Drupal is a free software package that allows you to easily organize, manage and publish your content, with an endless variety of customization." Drupal, Wordpress, and Joomla are among the most popular web content management systems. Drupal is very modular compared to other content management systems. Wordpress tends to include a lot of features right off the initial install whereas Drupal is more of a 'start small and tailor to your needs' system.

I have a habit of forgetting tasks I don't do everyday. When it's a task that requires quite a few steps, I like to document the steps because I find that instructions provided by projects sometimes skip steps or make assumptions I don't know. Installing and configuring Apache alone can be quite a task, particularly if you're

setting up multiple domains or have special library requirements. Add the complexity of learning MySQL (many people learn phpmyadmin) and things get a bit more challenging.

For the purpose of this article, I'm assuming access to the command line of a fresh install of Ubuntu Server 14.04.

STEP #1 - UPDATE UBUNTU SERVER:

```
sudo apt-get update
sudo apt-get dist-upgrade
```

```
php5_invoke opcache: already enabled for apache2 SAPI
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
* Restarting web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
[ OK ]
apache2_invoke: Enable module php5
* Restarting web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
[ OK ]
Setting up php5 (5.5.9+dfsg-1ubuntu4.11) ...
Processing triggers for libc-bin (2.19-0ubuntu6.6) ...
charles@drupal8:~$
```

STEP #2 - INSTALL APACHE, MYSQL, PHP, AND SOME BASIC PHP LIBRARIES:

```
sudo apt-get install apache2
mysql-server php5 php5-mysql
php5-gd
```

Several other dependencies are automatically added when you install Apache, MySQL and the basic PHP libraries.

During the install process, you'll be asked to enter a password for the root user to access MySQL databases. The password you use should be long and complex, especially if you plan on exposing the site to the Internet (as

opposed to Intranet).

When the installation finishes you may notice a message similar to: "**apache2 could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message.**"

We need to set the fully qualified domain name (FQDN).

STEP #3 - SET THE FULLY QUALIFIED DOMAIN NAME:

The FQDN consists of 2 parts, the hostname of the computer running the server, and the domain name. There are a couple of ways you can solve the FQDN problem, the first is to set the FQDN with the 127.0.1.1 I.P. address in /etc/hosts (in this case my hostname is drupal8).

```
127.0.1.1 drupal8
```

The second, and preferred method is to set the ServerName directive in /etc/apache2/conf-



available/fqdn.conf and enable the configuration with the apache program a2enconf. First set the ServerName directive in /etc/apache2/conf-available/fqdn.conf:

```
ServerName localhost
```

Next we need to enable the configuration file. It's important to note that the conf file must end in .conf. We can enable the configuration file with a2enconf:

```
sudo a2enconf fqdn
```

Lastly we need to reload Apache:

```
sudo service apache2 reload
```

STEP #4 - DOWNLOAD AND UNPACK DRUPAL AND MOVE IT TO /VAR/WWW/HTML:

For the purpose of this article I'm assuming you're just running a single website on a single server. If you plan on running multiple sites on the server your setup will be a little different. For multi-site setups, you'll need to know a bit about modifying apache configuration files in

/etc/apache2/sites-available. For this single site, we're just going to use the already enabled 000-default.conf file which points to /var/www/html for the web server.

The simplest method to download Drupal is to use wget. Version 7.39 is the current stable version at the time of this article.

```
wget http://ftp.drupal.org/files/projects/drupal-7.39.tar.gz
```

Next unpack Drupal 7:

```
tar -zxvf drupal-7.39.tar.gz
```

At this step, you may want to change into the drupal-7.39/ directory and read the INSTALL and README files. If you're using PostgreSQL instead of MySQL, be sure to read the INSTALL.pgsql.txt file. If you run into problems installing with MySQL, you might also want to have a look at the INSTALL.mysql.txt file. The INSTALL.txt file gives an overview of an overall installation. If you've changed into the drupal-7.39 directory, make sure you're above it for the next step, moving the drupal folders to /var/www/html:

```
sudo mv drupal-7.39/* /var/www/html
```

```
sudo mv drupal-7.39/.htaccess /var/www/html
```

If your server is also your desktop machine (generally not a great idea), you can check it out in a web browser by typing http://localhost/ into the web browser. From another Linux machine, you can type in the hostname of your web server http://drupal/. Despite adding the drupal files to /var/www/html, we still get the apache splash screen because there's an index.html file in the /var/www/html folder. Getting rid of this file will display the drupal installation when you navigate to the hostname/FQDN.

STEP #5 - CREATE THE MYSQL DATABASE TO HOLD THE DRUPAL FILES:

Before we can set drupal up, it needs a database to write to. MySQL is one of the most common databases in the world and a great choice here. You can use a web interface to mysql, but I've always preferred to just run mysql itself and issue commands:

```
mysql -u root -p
```

The -u switch tells mysql the user is the root user. The -p switch is used for passing the password, but if you don't put one after the -p, it will prompt you for the password (a better idea if you work with other people around). A tip worth remembering is that mysql commands are terminated with a semicolon. At the mysql> prompt, create a database with whatever name you want, I tend to use d_siteName:

```
create database d_test;
```

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 37
Server version: 5.5.44-0ubuntu0.14.04.1 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

If the command is successful, you'll see a "Query OK, 1 row affected" message. To see what other databases exist, use the `show databases;` command. Next we want to grant rights to access the database to a user who exists on the system. In my Ubuntu installation I used the username `charles`. The proper rights for the database can be found in the `INSTALL.mysql.txt` file.

```
grant select, insert, update,
delete, create, drop, index,
alter, create temporary
tables on d_test.* TO
'charles'@'localhost'
IDENTIFIED BY
'MyExtraOrdinarilyL0ngPaddw0r
d';
```

Don't forget the `.*` after your database name. I did this several times when I was first starting to use `mysql` and couldn't figure out why I kept getting an error.

Next quit `mysql` by issuing the `quit;` command. If you run `ls -al` on the files in `/var/www/html`, you'll notice they all have your username and group attached to them. Before installing `drupal` we want to change the group to the `www-data` group:

```
sudo chown -R :www-data *
```

```
sudo chown :www-data
.htaccess
```

If you want to specify a different username, specify it before the colon. For example:

```
sudo chown -R charles:www-
data *
```

Be a bit careful about the files you're changing permissions on. Make sure you're in the path where your `drupal` files are. `Drupal` also needs to be able to write to the configuration file in the `sites/default` directory, so temporary write permission needs to be given to this directory:

```
sudo chmod a+w sites/default
```

It's important that this write permission be removed immediately after the installation or your server could get hacked!

`Drupal` has a `default.settings.php` file in the `sites/default` directory that needs to be copied as `settings.php`.

```
sudo cp
sites/default/default.setting
s.php
sites/default/settings.php
```

(Note: the above command is all

one line with a space between `default.settings.php` and `sites/default/settings.php`) The `settings.php` file also must be writeable, and as with the `sites/default` directory, you should remove write permission after the installation.

```
sudo chmod a+w
sites/default/settings.php
```

We're almost ready to install `drupal`, there's one more step we need before running the installation `PHP` script, enabling `mod_rewrite`. `Mod_rewrite` is an `apache` module that enables rewriting of urls so they look more clean. For example: Instead of your browser going to `yoursite.com/en/ref=as_ss_tl?`, the web site points to `yoursite.com/example`. To accomplish this type:

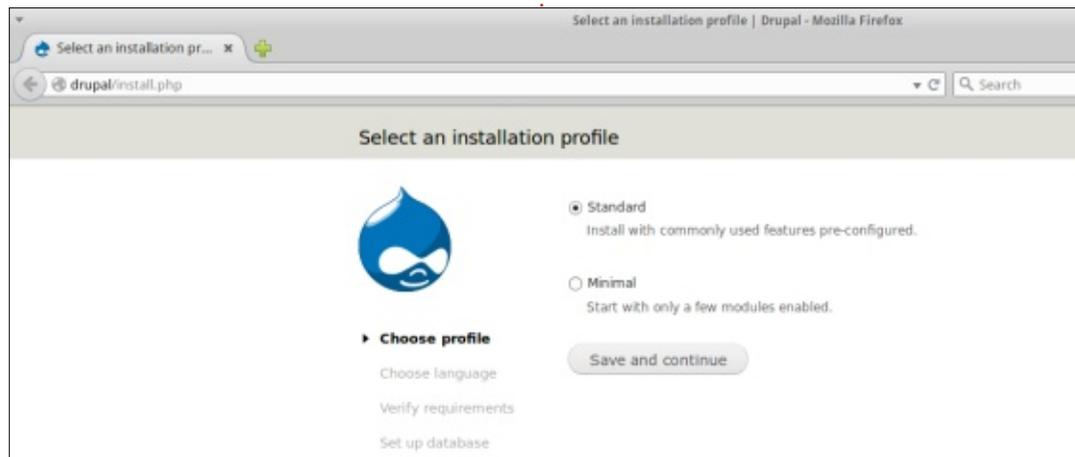
```
sudo a2enmod rewrite
```

Because `mod_rewrite` affects `apache` a restart is needed.

```
sudo service apache2 restart
```

STEP #6 - START THE DRUPAL INSTALL FROM A BROWSER:

The next step is to run the `install.php` file from a browser. If you've eliminated the `index.html` (not `index.php`) file, you should be redirected to the `install.php` file when you open the URL to your web server. I use `Linux` almost exclusively most of the time, but if you're using a `Windows` machine to access your `Linux` web server, you may need to tell the `Windows` machine hosts file which I.P.



address your Linux server resides on. On Windows, this file is C:\WINDOWS\system32\drivers\etc\hosts. On Ubuntu/Xubuntu, just enter your server URL into the browser. For example: <http://drupal/>

Choose Standard Installation. English is the built-in language. Other languages can be added and there's a link on how to do this on the installation page. The INSTALL.txt file covers installing other languages. For the moment click Save and Continue.

If all the steps above have been completed correctly you'll see the Drupal database configuration screen. If write permission is not set on sites/default, or the settings.php file is missing from that directory, you'll see an error

message indicating so.

Enter the database information from the earlier database you created into the database configuration page and click Save and Continue.

At this point Drupal will write the settings to the settings.php config file. We can now safely remove write permissions on this file and the sites/default directory:

```
sudo chmod go-w sites/default/settings.php
sudo chmod go-w sites/default/
```

The last step in setting up our Drupal installation is to enter your site information, including the name of your site, the site e-mail address (the address that will send

mail to users from), your admin username/password and admin email address (called the site maintenance account), the server's default country and time-zone, and whether or not you want to check for drupal updates automatically and receive email notifications of releases (a good idea). Click Save and Continue.

Now you can proceed to log into your newly created Drupal site.

This article has covered a basic installation of Drupal. Some of the concepts, such as creating a mySQL database, enabling mod_rewrite, installing PHP and PHP libraries will be useful installing other content management systems and wikis. It's a complex process and although the INSTALL.txt files are available, I always found I needed

to write down my own steps to remember the steps I got stuck on.

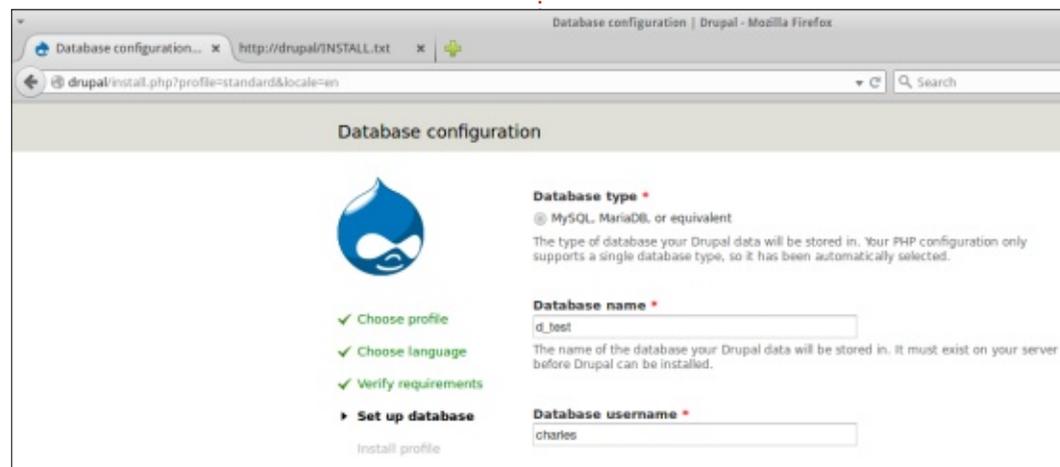
If you get stuck during the process of installing Drupal, there are several good resources:

- The INSTALL.txt and README.txt files in the drupal-7.39/ directory
- Drupal's Quick Install for Beginners:

<https://www.drupal.org/documentation/install/beginners>

- Apache virtual hosts examples: <http://httpd.apache.org/docs/2.2/vhosts/examples.html>

- 2bits.com - Besides having developed more than 30 modules for Drupal and being a server tuning company, 2bits has a lot of useful articles on Drupal - <http://2bits.com/contents/articles>





UBUNTU PHONES

Written by Ronnie Tucker

AQUARIS E4.5 AND E5 UBUNTU EDITIONS DEBUT IN INDIA WITH SNAPDEAL



The Aquaris E4.5 and Aquaris E5 Ubuntu Editions are to be sold through Indian online marketplace, Snapdeal (<http://www.snapdeal.com>).

It marks the inaugural launch of Ubuntu phone in India following a successful rollout of the Aquaris E4.5 and Aquaris E5 Ubuntu

Editions in Europe.

Phones will come preloaded with a number of scopes developed specifically for the Indian market.

The Aquaris E4.5 and Aquaris E5 Ubuntu Edition handsets are set to launch in India through Snapdeal, India's largest online marketplace. This follows on from two successful Aquaris Ubuntu Edition handsets launched in Europe earlier this year; the Aquaris E4.5 in February, and the Aquaris E5 in June. The devices will be available for purchase from Snapdeal by the end of August at a price of Rs 11,999 for the Aquaris E4.5 and Rs 13,499 for the Aquaris E5.

BQ GOES GLOBAL WITH UBUNTU

The successful European launches of the BQ Aquaris E4.5 Ubuntu Edition, and its slightly larger brother, the BQ Aquaris E5 HD Ubuntu Edition,

have seen the appetite for Ubuntu phones grow the world over.

As a result of this latent demand, BQ has created an Ubuntu global store where anyone can now buy an Aquaris Ubuntu Edition handset. We're really excited by this move and BQ's clear commitment to ensuring more of our fans worldwide get their hands on these devices. Visit BQ's global store at: <http://store.bq.com/gl/>

We know (and BQ has acknowledged) that network frequency, and mobile operator compatibility in some countries, such as the US, will limit some of the handset and OS functionality that European users are presently enjoying. However, this worldwide launch will provide the opportunity for our fans across the globe to get a taste of the Ubuntu OS and experience it for themselves on a great range of BQ devices.



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MY STORY

Written by Jim Dyer

My Ubuntu Install Disaster

My goal was to install Ubuntu Linux 14.04, but then Windows 8.1 and related changes ruined my good plan.

In late July of 2015, I got the idea to replace my oldest desktop computer, so I purchased a refurbished desktop at my favorite local computer store. The computer came with Windows 8.1 installed, and my plan was to replace that with Ubuntu 14.04 LTS as I had previously done several times from Windows XP on two desktops and my Acer Netbook. Those earlier experiences had learning curves, but nothing that was a serious problem. However, this time, trying to install Ubuntu to replace the Windows 8.1 could be called very frustrating at best and a disaster at worst.

I started the process a few days before leaving on a two-week vacation trip. At first I could not even get Ubuntu to install to the HD of the new computer. Some agony and more reading, and a few things that I failed to record, got me to the point where Windows

8.1 was gone and Ubuntu was installed. Along the way, I used GParted and deleted or modified partitions and, as noted above, did a few things that I unfortunately did not record. Installed - yes, boot into Ubuntu - NO.

After hitting the "it will not boot" wall, I set it aside and left for vacation. Sadly, my brain continued to rehash the frustration as I traveled. I had only my Kindle Fire tablet with me so it got some workout searching Google for information regarding the problem I had encountered. I read much then and more online after returning home.

Once home, I turned to solving the 'will not boot' problem. Again, some frustration and agony, but no success. At that point, my brain asked "why don't you return this computer and get one that has Windows 7 installed?". That thought came from reading about Windows 8, Secure Boot and UEFI. You can search those things on Google as I did. I took my brain's advice, got a refurbished computer

with Windows 7, installed Ubuntu 14.04 LTS from a USB drive with no problem, and once more became a happy Ubuntu user.

In hindsight it is not clear to me if I created part of my problem, but I do not think I did. After my reading, talking at the computer store and reading/emailing the computer manufacturer Support, I was still confused. Certainly Windows 8 changed the install/boot process, but there was some info that said the computer lacked basic support for Linux drivers and could not run Linux as an OS. Did not sound right to me, but I was wanting to get this frustrating problem behind me so I pressed on to success with the Windows 7 computer as noted above.



Jim is a retired Chemical Engineer who has evolved through DOS, Windows 95/98/XP, and Mac OS 6 ...X to his current Ubuntu user status.



SKYPE

In issue 98 you have the question "I have heard that Skype is available for Ubuntu. How should I install it?"

Please note that while Skype is technically available for Linux, Skype (or rather Microsoft - since they own it now) has stopped supporting Linux, and a lot of additional features (like screenshare) don't work (in case of a multi-participant call) or have very poor quality (in a one-on-one call) when using Linux (compared to Windows / Mac).

People should look for an alternative (Google Hangouts works nicely). I didn't try Jitsy yet.

Attila

MULTIPLE PASSWORDS SCRIPT

I know FCM #91 is not new but I just have read it. I have a few remarks about the article 'HowTo - Multiple Passwords With A Script'.

First of all, I would like to know the principles of publishing articles. I ask it because of my ambivalent feelings about the named article. Although it could have been a good howto for newbies, it can be more dangerous than useful. Let me explain: It makes no sense to write a script to encrypt a text file which contains passwords. There are a lot of other ways to secure our passwords. Eg: password manager.

If we do this anyway, we should not store the encrypted file on our Desktop and the logs of the script in our home directory, I think.

The author of this article mentioned that he uses this homemade encryption script in business, too. The average reader and user might conclude that this

encryption method is safe because it was described by an expert. In my opinion using this script can give a false sense of security to the readers and users.

In addition, this script is unchecked, it's from an author who is possibly not known by any reader. Full Circle Magazine is a great place to inform people about IT-security. To download and use a script by an unknown person (which is maybe downloaded from untrusted websites) is not safe. I'm afraid that publishing this howto was not a good idea at all. Maybe I'm wrong but I think that Full Circle Magazine has a task to teach the readers about careful computer usage. Publishing an article with a script to do something that can be done by other, more secure, ways is not logical. There are a lot of useful scripts published by Full Circle Magazine, but this is not one of them.

So, because of my described feelings I wish to know on what basis you decide to accept and

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

FULL CIRCLE NEEDS YOU!



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

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

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

publish an article.

Sorry for the long letter, I just wanted to write about my feelings about publishing this howto.

Vivien

Ronnie says: *By publishing the articles we have to assume that the writer has checked his or her articles for errors (either grammatical or technical). We're a bunch of volunteers and aren't experts in everything. And, it goes without saying, that if someone runs a script (or tries anything) that we print, then it's at their own peril.*

DOWNLOAD ALL THE THINGS!

I remember seeing an article about a script to allow downloading of all past issues. Can you tell me how to get that?

Boudi

Ronnie says: *Open a terminal and enter these commands one at a time:*

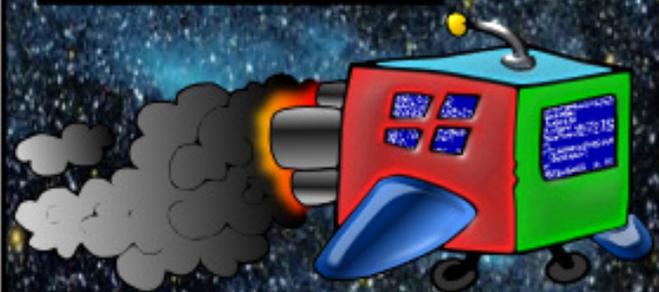
```
cd ~/Downloads
wget
www.liedler.at/dl/dl_fcm_gui.py
chmod +x dl_fcm_gui.py
./dl_fcm_gui.py
```

Up should pop a GUI that will let you choose which issues to download.

Tuxidermy

SO, SIR, OUR SPACE BOX WAS TRAVELING AT THE SPEED OF 20000 CRASHES PER MINUTE...

I SEE. STANDARD SPEED.



JAKE LANDED ON A NEW PLANET AND MET THE ALIEN INHABITANTS. THEY LOOKED HARMLESS ENOUGH.

ALIENS, YOU SAY?



THE ASTRONAUT THEN TRIED TO IMPRESS THEM WITH OUR TECHNOLOGY. IT WAS THE FIRST STEP TOWARDS COLONIZATION.

DID IT WORK?



NOT REALLY, SIR. THE ALIEN SAID THEY DIDN'T NEED ANYTHING FROM US "EARTHLINGS". HE SAID THEY WERE ALREADY EVOLVED INTO A FREE AND PERFECT SOCIETY. HE TOLD JAKE HE WAS SORRY WE'RE SO PRE HISTORIC.

THAT'S RIDICULOUS! WHAT DID JAKE DO NEXT?

WELL, SIR...



HE DECIDED TO COME BACK AND HE'S ACTING KIND OF APOCALYPTIC NOW.

THE END IS NEAR!



* EARTH'S SCIENTISTS ARE STILL TRYING TO FIGURE OUT HOW THE ASTRONAUT MANAGES TO SWEAT OUT OF HIS SPACE SUIT



Q&A

Compiled by Gord Campbell

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

Q I messed up my ~/.bashrc file, how do I get a new standard one?

A (Thanks to **steeldriver** in the Ubuntu Forums) You can copy it from the /etc/skel/ directory.

Q Can I use one of the recent Nvidia cards with Ubuntu?

A Yes, see this thread: <http://ubuntuforums.org/showthread.php?t=2263316> (Thanks to **jempa333** in the Ubuntu Forums).

Q I use the USB serial port to connect to routers, but every time it reboots I have to change permission for /dev/ttyUSB0 and /dev/ttyS0. How can I change this permanently so it has chmod 777 on reboot?

A (Thanks to **SeijiSensei** in the Ubuntu Forums) Add the command to the file /etc/rc.local, a script that runs after everything else that starts at boot. rc.local

runs with root privileges, so you don't need sudo, just:

```
chmod 777 /dev/ttyS0
chmod 777 /dev/tty/USB0
```

Q Netflix used to work perfectly in Chrome, but I haven't been able to get it to play movies for about the past month. When I go to the Netflix website, it loads normally – I can browse through programs etc – but if I attempt to play any video, I just see a still from the video (without the spinning red circle that shows it's loading) and, after a minute, a black screen appears that says "Whoops--something went wrong" with error code M7083-1013.

A (Thanks to **monkeybrain20122** in the Ubuntu Forums) Probably your profile is corrupted. Close Chrome. Open the file manager at your home. Choose 'show hidden files' from the menu or press ctrl + h. Then locate the hidden directory .config (note the '.'), open it and rename the subfolder google-

chrome to something like google-chrome-bak. Now start Chrome and see if it works.

TOP QUESTIONS AT ASKUBUNTU

* Can someone explain tilde usage?

<http://goo.gl/PUudGJ>

* Is there any Ubuntu 14.04 theme to make it look like Windows 10?

<http://goo.gl/t82dtg>

* Alert when terminal program finishes running? [on hold]

<http://goo.gl/OMN25E>

* Which command should I use to open an mp3 file?

<http://goo.gl/1L8p1d>

* Why do I need the x permission to cd into a directory?

<http://goo.gl/ihnMWI>

* How to get a full size of directory without listing the files/dir within?

<http://goo.gl/KuRczJ>

* Shell script If syntax error <http://goo.gl/ynHh61>

* What version is this Live CD / Live USB?

<http://goo.gl/xzOqJQ>

* How to make it so that a file can only be executed by root, but not as root?

<http://goo.gl/rtm60i>

TIPS AND TECHNIQUES



PRIVATE FOLDER SHARING

When I try a new distro or version of Linux, I always set up a folder which is shared over the network, and access existing shared folders on other computers. I always make it wide-open, with no security, and it always works without any command-line effort, or editing configuration files. The network has computers running several Ubuntu variants and some Windows. Then the real world



came calling.

I needed to set up a production-environment server with about 20 private shared folders, to be used for personal backups. So Sally, Rebecca and John would each have a folder where they could back up their systems, and they could not see each other's backups.

The chosen operating system is Xubuntu 15.04, and I got it to the point where it kind of works. From other Xubuntu or Linux Mint systems, everything just worked. From Windows, not so much. The server didn't even appear in Windows' Network file manager, although it was always accessible by IP address. Then, with nothing

changing, the server appeared, and I could set up the shared folder as a drive in Windows. However, when I tried to run a lengthy backup, the drive would disappear again, and the backup would fail.

I'm still working on it, and I hope to give a more positive report next month.



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

QUICK TIP

by Andy Lino

If you have a machine and you see the graphs peak but you don't know who is using the bandwidth, try this at the console:

```
sudo iftop i eth0
```

iftop has been built in to Ubuntu for several versions now.

iftop: display bandwidth usage on an interface by host

Synopsis: iftop h | [npblNBP] [i interface] [f filter code]

```
-h display this message
-n don't do hostname lookups
-N don't convert port numbers to services
-p run in promiscuous mode (show traffic between other
-b don't display a bar graph of traffic
-B Display bandwidth in bytes
-i interface listen on named interface
-f filter code use filter code to select packets to count
-F net/mask show traffic flows in/out of IPv4 network
-G net6/mask6 show traffic flows in/out of IPv6 network
-l display and count linklocal IPv6 traffic (default: off)
-P show ports as well as hosts
-m limit sets the upper limit for the bandwidth scale
```

-c config file specifies an alternative configuration file

```
iftop, version 1.0pre2
copyright (c) 2002 Paul Warren <pdw@exparrot.com> and
contributors
```

As you can see, this tool can give you the output to IPv4 and IPv6 traffic, and also it should help you find out where your bandwidth is being used whether upstream, or downstream.



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AVAILABLE WORLDWIDE



Back in 2001, there was an incident on September 11 that lead many people to go “OMG! We are doomed! We must increase security! Do whatever it takes!” And the NSA was happy to oblige. On 7/7/05 an attack in London added to the frenzy. I think it is fair to say that these security agencies felt they were given a mandate to “do anything as long as it stops the attacks,” and thus was the overwhelming attack on privacy moved up a whole level. To be clear, security agencies are always pushing the limits, it is in their DNA. And politicians have learned that you never lose votes by insisting on stronger security and appearing “tough.”

But the reality is that security is never 100%, and the higher the level of security, the greater the costs in terms of our privacy and liberty. And it is also the case that total insistence on liberty and privacy would cause your security to go down as well, so you really should not adopt any simple-minded approach to this problem. In general, as you add layers of

security, each added layer gives you less benefit. Some simple security steps can give you a lot, but as you add more and more, the added benefit drops, and we call this the Law of Diminishing Returns. By the same token, each added measure extracts an ever-increasing cost in terms of the loss of liberty and privacy. Conceptually, you could draw a couple of curves, one rising (the costs) and the other falling (the benefits), and look for where the curves cross to determine the optimum level of security that balances the costs and benefits, but in practice it is not that simple. Measuring these costs and benefits is tricky, and there is no simple equation for either curve. Nonetheless, the balance does need to be struck.

In the wake of the 9/11 attacks, Bruce Schneier published a book called *Beyond Fear: Thinking Sensibly About Security in an Uncertain World* (2003). In this book he shows that hysteria is not a good approach to security, and that you need to ask yourself some

questions to see what the cost vs. benefit calculation looks like for you. I am going to draw on his model to talk about security as we are discussing it in this series.

There is an old joke about what constitutes a secure computer. The answer is that it has to be locked in a vault, with no network connection, and no power connection, and even then you need to worry about who can access the vault. It is a joke, of course, because no one would ever do this. We use computers and the Internet because of the benefits they give us, and having a computer in a vault is just a waste of money. We accept a certain degree of risk because that is the only way to get the benefits we want.

FIVE-STEP PROCESS

For any security measure you are contemplating, you need to have a clear-eyed, rational look at the costs and benefits, and Schneier offers a Five-Step Process to accomplish this, This is a series of questions that you need to ask

in order to figure out if this particular measure makes any sense:

- What assets are you trying to protect? This is what defines the initial problem. Any proposed countermeasure needs to specifically protect these assets. You need to understand why these assets are valuable, how they work, and what are attackers going after and why.
- What are the risks against these assets? To do this you need to analyze who threatens the assets, what their goals are, and how they might try to attack your assets to achieve those goals. You need to be on the lookout for how changes in technology might affect this analysis.
- How well does the security solution mitigate the risks? To answer this, you need to understand both how the countermeasure will protect the asset when it works properly, but also take into account what happens when it fails. No security measure is 100% foolproof, and every one will fail at some point in some circumstances. A fragile

system fails badly, a resilient system handles failure well. A security measure that is slightly less effective under ideal conditions, but which handles failure much better, can be the optimum choice. And a measure that guards against one risk may increase vulnerability somewhere else. And you really need to watch out for False Positive vs. False Negative trade-offs. It is a truism that any set of measures designed to reduce the number of false negatives will increase the number of false positives, and vice-versa.

- What other risks does the security solution cause? Security countermeasures always interact with each other, and the rule is that all security countermeasures cause additional security risks.
- What trade-offs does the security solution require? Every security countermeasure affects everything else in the system. It affects the functionality of the assets being protected, it affects all related or connected systems. And they all have a cost, frequently (but not always) financial, but also in terms of usability, convenience, and freedom.

And going through this process once is not the end. You need to

re-evaluate your choices as systems evolve, as technology changes, etc.

EXAMPLE: PASSWORDS

I have a cartoon on the wall of my cubicle that shows an alert box that says “Password must contain an uppercase letter, a punctuation mark, a 3-digit prime number, and a Sanskrit hieroglyph”. We’ve all encountered this, and it does get frustrating. This is a humorous take on something that is an accepted best practice. I recall a story about a fellow who worked at a company that insisted he regularly change his password, and would also remember the 8 previous passwords and not let him use any of them again. But he liked the one he had, so he spent a few minutes changing his password 9 times in a row, the last time being back to his favored password. Was he a threat to security, or was the corporate policy misguided? Let’s try Bruce’s model and see where we get.

- What assets is the company trying to protect? I think this has several possible answers. The company may want to prevent unauthorized access to corporate data on its network. Or the company wants to prevent unauthorized use of its

resources, possibly with legal implications. And the company may be concerned to prevent damage to its network. All of these are good reasons to try and control who has access to this asset, and to protect it. But knowing which of these is being targeted may matter when we get to trade-offs and effectiveness of the proposed countermeasures. For now, let’s assume the primary interest is in preventing unauthorized access to the data, such as credit card numbers on an e-commerce site.

- What are the risks against these assets? Well if we are talking about credit card numbers, the risk is that criminals could get their hands on these numbers. From the company’s standpoint, though, the risk is what can happen to them if this occurs. Will this cause them to assume financial penalties? Will the CEO be hauled in front of legislative committees? Will their insurance premiums rise as a result? This is the sort of thing companies really care about. And when you understand this, you begin to see why companies all adopt the same policies. When people talk about “Best Practices”, you should not assume that anyone has actually determined in a rational manner what the best

practices should be. It only means that they are “protected” in some sense when the things go wrong. After all, they followed the industry “best practices”. The biggest failure of security is when companies or organizations just apply a standard set of rules instead of creating a process of security. I see this criticized constantly in my daily newsletter from the SANS Institute.

- How well does the security solution mitigate the risks? This becomes a question of whether forcing people to change their passwords frequently is a significantly effective measure in preventing unauthorized access to computer networks. And here is where things really start to break down. It is very difficult to come up with many examples of cases where a password in use for a long time leads to unauthorized access. That is simply not how these things work. We know that the majority of these cases derive from one of two problems: social engineering to get people to give up their password, and malware that people manage to get on their computer one way or another. I suppose you could make an argument that forcing people to frequently change passwords

might in rare cases actually do some good, but there is no way to say that this is in general an effective countermeasure against unauthorized access.

- What other risks does the security solution cause? There are several possible risks that come out of this. First, since all security measures require a variety of resources (and people's time and attention is one of those resources), emphasizing one security measure may take resources away from more effective measures that don't get sufficient attention. But there are also risks from how people act in response to this policy. In the ideal world of the security department, each person with access would choose a long, complicated password each time, chosen for maximum entropy, and then memorized but never written down. Sadly, for the security department, they have to deal with actual human beings, who do not do any of these things. Most people at the very least consider this an annoyance. Some may actively subvert the system, like the fellow in our story who changed his password 9 times in a row to get back to the one he liked. But even without this type of

subversion, we know what people will do. If you let them, they will choose something that is easy to remember as their first attempt, and that means they will most likely choose a password that can easily be cracked in a dictionary attack. If you instead insist that each password contain letters, numbers, upper and lower case, a Sanskrit hieroglyph, and two squirrel noises, they will write it down, probably on a yellow sticky note attached to their monitor. If the person in question is a top level executive, it gets even worse, because they won't put up with the BS ordinary worker bees have to tolerate.

- What trade-offs does the security solution require? This policy causes a major impact on usability and convenience, and all of this for a policy that we saw above actually accomplishes very little. In the majority of organizations, the IT department is viewed with a certain amount of hostility, and this is part of it. In addition, anyone in an IT Help Desk can tell you that they get a lot of calls from people who cannot login because they forgot their password, which is a natural consequence of forcing people to keep changing it.

BOTTOM LINE

So what does all of this mean in the final analysis? I think it means that you need to carefully consider which measures are actually worth taking. And this is, at least in part, a cost vs. benefit analysis. For instance, as I write this, the Heartbleed vulnerability is in the news a good deal, and I got to hear Bruce Schneier discuss how people should react. And he did not say "OMG! Change all of your passwords right now!" He said you should assess the case. If it is your password to login to your bank, that is probably something you want to change. But if it was some social network you access once every two weeks, you needn't bother. And that seems reasonable.

And as another example, although I have discussed how to encrypt e-mails and digitally sign them, that does not mean I open up GPG every time I send an e-mail. It is something of a pain in the posterior to do, and I use it judiciously. I don't see the point in digitally signing every email when a lot of it is just stupid stuff anyway.

THREE FINAL RULES

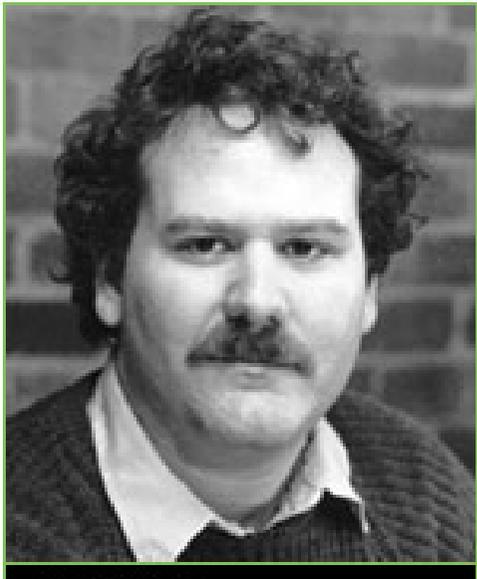
We will finish this discussion with Bruce's final three rules from Beyond Fear:

- Risk Demystification: You need to take the time to understand what the actual risk is, and understand just how effective any proposed security countermeasure would be. There will always be a trade-off. If the risk is low, and countermeasure not particularly effective, why are you doing this? Saying "we must do everything in our power to prevent..." a risk that is unlikely, and where the countermeasures are not likely to work, is how you get to what Snowden revealed.
- Secrecy Demystification: Secrecy is the enemy of security. Security can only happen when problems are discussed, not when discussions are forbidden. Secrecy will always break down at some point. This is the failure mode of Security by Obscurity. Most often, secrecy is used to cover up incompetence or malfeasance.
- Agenda Demystification: People have agendas, and will often use security as an excuse for something that is not primarily a security measure. And emotions can lead people to make irrational trade-offs.



LINUX LOOPBACK

Written by S. J. Webb



The 1980's saw an onslaught of malicious viruses as a response to increased home computers. As a teen, Richard Skrenta wrote the Elk Cloner that targeted Apple computers in 1981. It was the first wide-scale virus transmitted by disk that worked from the boot sector. Infected Apple computers would then transmit this virus on to a clean disk. Elk Cloner wipes the screen and would display a simple poem.

In 1983 Frederick Cohen (left)

```
ELK CLONER :

      THE PROGRAM WITH A PERSONALITY

IT WILL GET ON ALL YOUR DISKS
IT WILL INFILTRATE YOUR CHIPS
YES IT'S CLONER

IT WILL STICK TO YOU LIKE GLUE
IT WILL MODIFY RAM TOO
SEND IN THE CLONER!
```

began using the term virus to describe programs like Rabbit and Creeper. These programs worked very much like a real life virus. In 1986, the first IBM PC virus was Brain Boot that originated out of Pakistan. In 1987 six more viruses populated: Cascade, Jerusalem, SCA, Vienna, Lehigh, and Christmas Tree. These viruses were boot sector viruses aimed at crippling the executable files on the hard drive.

In the 1990's the viruses became more complicated, moving from the boot sector. The first polymorphic virus named 1260 is created by Mark Washburn. This virus used encryption code and the Vienna as a source.

The media painted the Michelangelo virus as being the digital end of times in 1992. This virus was supposed to wipe out over a million hard drives. In reality, the damage from Michelangelo was over-estimated. By the end of 1990's, over 14 various viruses arose in the digital world. The commercial

development of antiviral programs started. The increased popularity of the internet helped spread viral infection rates. Over 30 plus viruses were generated from 2000 to 2005. Luckily these viruses targeted the Windows OS. However let's review some of the Linux viruses.

The first Linux virus arose in 1996, and was Stoag. It exploited holes in the kernel and infected executable binary files. Bliss rose a year later, it was written to prove that Linux is not virus-proof, and it also affected executable binary files. At the end of 1999, Vit developed as a cross platform OS infector. It also affected executable binary files.

At the start of the new century, a number of harmless non-memory resident parasitic viruses developed: Winter.341, Zip Worm, Satyr, Rike, and Ramen. By the mid 2000's, three aggressive Linux viruses were produced: Badbunny, Kaiten, and Koobface. Badbunny would infect via an openoffice document file format, and display

a lewd picture. Kaiten allowed for backdoor access to a Linux platform. Koobface is spread by social networks aimed at gathering login information.

Many experts agree that Linux is not impervious to viruses. However the requirement for root access on many distros diminishes the ability of viral infection on the hard drive. The biggest threat to Linux users is social engineering.



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

Computer virus hits, but termed a dud

NEW YORK (AP) — The day of techno- doom turned out to be a dud.

The much-typed Michelangelo computer virus struck at scattered points around the world Friday but failed to live up to predictions of widespread catastrophe.

A virus expert compiled reports of about 1,000 damaged machines worldwide by late in the day. A spot check by Associated Press Midwest found few companies or other personal computer users were affected.

The dire projections had ranged into the millions of infected PCs.

Some experts said the anticlimax could make computer users less careful about the thousands of other variations of the inebrious electronic invaders, which remain a real threat.

"If there's an upside to all this it's greater awareness of the problem," said Pam Kane, an author on viruses and owner of a company that makes anti-virus software. "The downside is it's the boy who cried wolf."

The virus also descended inside IBM-type

personal computers awaiting the PC's internal clock to reach March 6, the birthday of the Italian Renaissance artist. Once the PC is turned on that day, the virus can destroy programs and data on the computer's hard disk.

The virus — a rogue bit of computer software — was discovered about a year ago in Europe. It moves from computer to computer on worn exchange-infected floppy disks. Its creator and the connection with the artist are unknown.

For days, news media relayed forecasts of impending doom from Michelangelo. The story had all the right elements: a mysterious invader with a scary name that could cause havoc by a definite deadline in machines relied upon by millions.

The reports often failed to mention that many projections of potential damage were provided by companies that make anti-viral software and stand to benefit from the scare.

One source was John McAfee of McAfee Associates, the largest seller of virus-killing

programs. McAfee was widely quoted as saying Michelangelo had infected up to 8 million computers worldwide.

Asked Friday whether he had overstated the case, he said the low rate of actual Michelangelo damage was due partly to precautions many PC users took.

McAfee said he received at least 1,000 reports nationwide of hits by the virus Friday, which he believes are a fraction of all the incidents.

Joseph Wells, a virus specialist at McAfee competitor Citrus International Inc., said he compiled a list of about 2,000 PCs worldwide damaged by Michelangelo, based on reports from other virus experts and organizations.

For each of these "hits," about 100 other computers were found to have been contaminated with the virus before the Friday deadline and cleaned, he said.

The scare prompted many PC users to invest in anti-viral software at \$50 or more a copy. Computer stores reported they were cleaned out of the program.



UBUNTU GAMES

Written by Joseph Michaels

Retro Game Console Emulators



An Ubuntu user since 2007, I consider myself a long-time user. In computer years, using just one operating system at home for eight years is a long time. Before that I was an avid Macintosh proponent for many years. The moment I installed my first Linux distro, called Ubuntu, I was simply amazed at how fast it made an old computer run. I was hooked. Never again would I dish out an outrageous amount of money for a name-brand computer that ran a solid operating system – which was Apple's OS X. Now I was empowered to find a used computer, at a fraction of the cost,

install Ubuntu on it, and I was gold. Several times I even got free computers from a business that was replacing its 4 year-old Windows computers with new ones. The systems that were doomed for the dump found new life when I installed Ubuntu on them.

A few years ago, I tried to run game console emulators on Ubuntu. At the time, the only emulators that were available, or would work, were the Windows emulators. So I used Wine to run those emulators. I was not a big fan of Wine, as it was hit or miss on which programs would work. Eventually, I removed Wine from my system. Years went by before I'd try emulation again. In fact, I didn't rediscover it again until about nine months ago. This time, I was quite delighted to find that several emulators, made just for Linux, worked very well on Ubuntu.

Before I go any further, I'd like to do a bit of housekeeping. It's perfectly legal to download and own the emulators. However, it's

the game roms that may still be protected by copyright laws. It is up to you to ensure that you are using the game roms legally in your country. There are oodles of articles on the internet concerning this, so I'll leave the Googling and reading up to you. The game roms can be found on the internet – I'll leave it at that.

Shown far left is a screenshot of the bottom left of my launcher. From top to bottom we have the emulators PCSX, Snes9x, bsnes, Kega Fusion, FCEUX, and GFCE.

PCSX is the PlayStation one (PS1) 32-bit emulator. It can be installed from the Ubuntu Software Center. From my experience, about half the game roms will work with this emulator. I mainly use this emulator to play sports games. There were so many sports games made for the PS1, that you'll easily find that more than enough games work for the sport you're interested in. Of course there are various other types of games available for the PS1 – from first person shooter

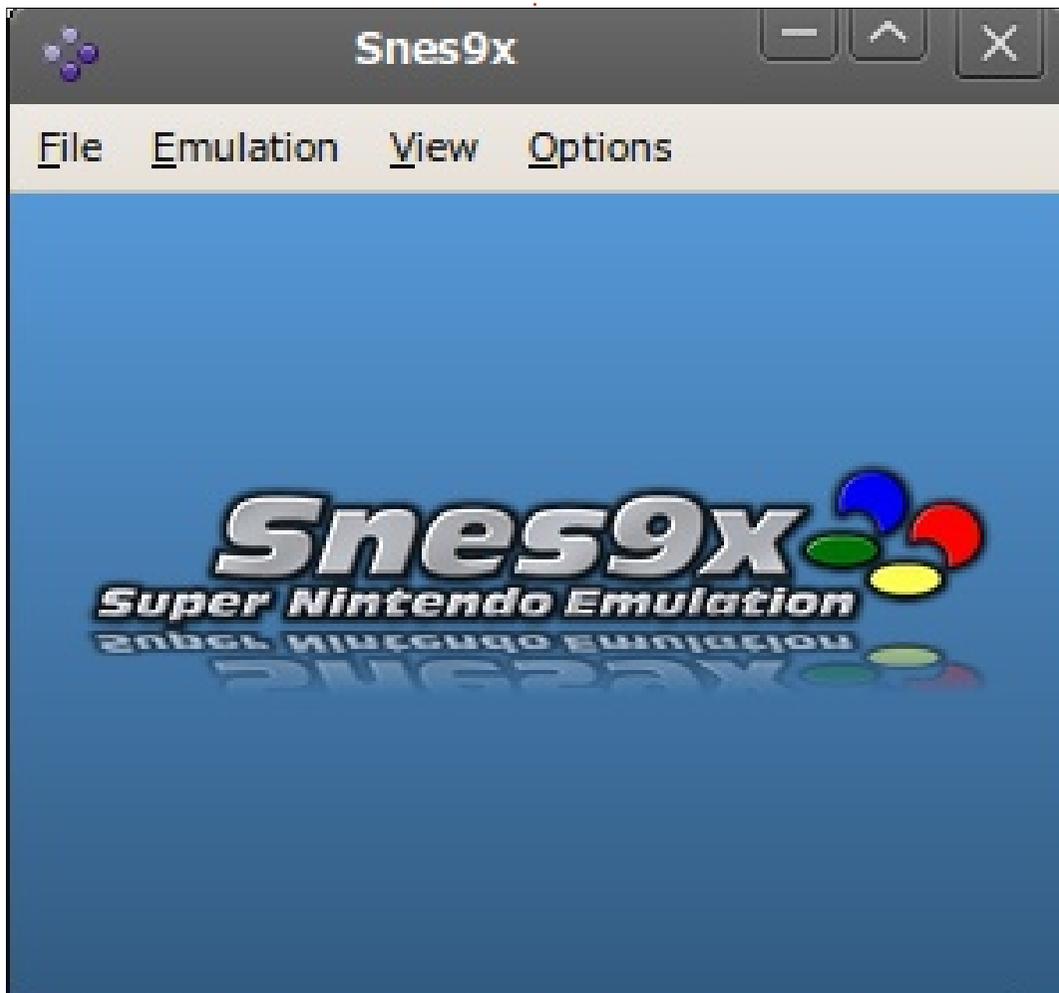
games to platform games to whatever you desire. On my 1600x900 monitor, I set the PCSX to run in a 1360 x 768 window. You can play it at full-screen, but I like to keep access to my system, thus I play it in a window.

I don't have a dedicated video card on my system, and that's not because I haven't tried them. In fact, I installed an Nvidia GT 610 with one gig of ram. After viewing the System Monitor for a while, I could tell that my Core 2 Duo processors were being taxed more than before the card was installed. In fact, I was experiencing a slowdown in frames-per-second in some of my emulators because of it – so I sent that card back. I decided to try an older card for my system, and I got an Nvidia NVS 300 card that had 500 megabytes of memory. It did better, but still some of my emulators were slowing down. So I returned the second card and decided to stick with the integrated video that my motherboard had built in. Both cards would have worked great for me if my goal was to play native

Linux games. In fact, I downloaded 0 A.D., and that game worked very smoothly with either of the cards; it plays choppy without a card. But my gaming is all emulating, so I made the decision to go without a dedicated video card. The PCSX emulator has the option to use the OpenGL 1.1.78 driver, and even my integrated video can do that, so I do use OpenGL with that emulator

and it works fine. There's also the option to use the Xvideo driver, but my system won't play the roms right using that choice. The PCSX emulator will play more game roms if you get the PS1 bios file for it. It can be found on the internet, and that's all I'll say about that.

The next emulator on my launcher is the Snes9x emulator.



This has become my favorite emulator, even though it emulates a 16-bit system – the Super Nintendo console. I used to like PCSX best, but I've really enjoyed the Super Nintendo games the most in the past few months. Most emulators allow you to save state and load state – usually in a menu option, or by assigning them to keyboard keys. In addition to allowing this, Snes9x lets you assign those states to the gamepad controller you're using. So you can quickly save state while you're playing; if you die no problem, just click the load state button on your gamepad and give it another go. Being able to do this on the gamepad adds a most enjoyable element to playing platform games where you are trying to advance to the next level or beat a game boss. Some folks say it's cheating, or consider it an abuse of the save state and load state buttons when you beat a game this way, because that option wasn't available on the original consoles. I'm not such a purist, especially since this heightens my enjoyment of the games.

Snes9x has the option of letting you choose the OpenGL driver, the

Xvideo driver, or allowing the software scaler. I simply let the software run the game. The OpenGL is apt to slow down as my OpenGL is too ancient, and the Xvideo driver doesn't give vivid graphics. For screen resolution, I set the preferences to change full-screen resolution to 1600x900 and set it to use full-screen when opening a game rom. Also, I set the screen preference to maintain the Snes 4:3 aspect ratio. With these settings, as soon as a game rom is loaded, I tap the escape key once, and the games snap down in size so that the launcher and top of the Unity desktop is accessible – again, giving me access to the computer while playing. One last thing about Snes9x is that version 1.53 works only on Ubuntu 12.04 LTS. I attempted to install multiple versions on two 14.04 LTS systems and it would not work on either one. That's one of the reasons I've stayed with 12.04 LTS. This needs to be fixed. Another emulator that many users have had problems with in 12.04 and 14.04 is Zsnes – it's been widely reported on the forum that it freezes up at 35 minutes and I can certainly verify that.

Snes9x is not in the Ubuntu

Software Center. If you have Ubuntu 12.04 LTS, you can install it with the terminal:

```
sudo add-apt-repository  
ppa:bearoso/ppa  
  
sudo apt-get update  
  
sudo apt-get install snes9x-  
gtk
```

Next on my launcher is the bsnes emulator, which is obviously another Super Nintendo emulator. This emulator is in the software center and is described as an emulator that focuses on accuracy, debugging functionality, and clean code. If you choose to install this one, make sure you also install snespurify (if it doesn't automatically install with bsnes). This emulator requires higher system requirements, although they don't tell you the minimum. I can, however, attest to the fact that it does indeed cause both of my processors to use 60 to 80% of their processing power. Compare that to the 20 to 40% that Snes9x makes my two processors work. Bsnes doesn't give you the option of OpenGL or Xvideo, but it probably uses OpenGL as its successor uses a higher version of OpenGL. I don't use bsnes very

often for three reasons. First, you have to use the mouse to go to a menu to save state and load state. Second, you have to open snespurify and use that to "purify" each game rom that you want to play – resulting in a new game rom file being created that bsnes can open. Third, Snes9x seems just as accurate to me. I keep bsnes as a backup, in case Snes9x would not

open a particular rom or if Snes9x stopped working for some reason. Bsnes also can run NES, Game Boy, and Game Boy color roms. I have 2 other emulators for NES; besides, the Game Boy type roms are such low resolution that they don't interest me. The successor of bsnes has had its name changed to is Higan. In the software center, Higan is available for 14.04 LTS and

bsnes is available in the 12.04 LTS software center. Snespurify is not needed for Higan – it's built in.

The next emulator, with the blue and orange letter K, is Kega Fusion. This is the emulator for the Sega Master System, Game Gear, Genesis, and SegaCD. I use it to emulate Sega Genesis game roms. There are many heated debates on which console is superior – the Sega Genesis or the Super Nintendo. I've read quite a few online articles where folks take sides, and some objective articles where the specifications of each system are compared. Many of the SNES specs were superior because that system came out later; however, the Sega still had a faster processor and boasted "blast processing." Many consider both systems to be the best console systems ever produced when you do a handicapped comparison of all the video game console eras. Games that were released on each console are often compared. And both had their signature games – Sonic the Hedgehog vs. Super Mario Brothers. Kega Fusion allows for a Genesis bios file, which you can find on the internet, but I've read that the Genesis did not have a bios file during most of its



production. The emulator seems to work equally well with or without a bios file selected. Neither Snnes9x nor bsnes require the user to select a bios file either. I only recently added Kega Fusion to my arsenal, but it has loaded the few games I've thrown at it nicely and plays well. In the past I attempted to get the Sega Saturn emulator called Yabause (in the software center) to work – without success. So I had been looking for some type of Sega emulator for some time – Kega Fusion was suggested by a user on the Linux Mint forums. Although Kega Fusion doesn't allow one to program the gamepad for save/load states, it does allow a quick tap of one of two functions keys to do this – which is much better than mousing around in menus. I'm really looking forward to playing more Genesis game roms.

The next emulator is FCEUX, which is the 8-bit Nintendo Entertainment System emulator. One could use bsnes or Higan to emulate NES games, but FCEUX uses less than half the system resources. FCEUX does have one limitation – it doesn't allow for full-screen play. One can increase the window size to 3x scale, which

basically makes a window about one half to one third the size of your screen. This is fine and I've found it to be quite playable. FCEUX does apply a video filter to the games, which smooths out the pixels. The emulator doesn't show in any menus which video filter it uses, and has no option to turn it off – which many emulators do offer.

GFCE is the last emulator, and it's also an NES emulator. GFCE allows for full-screen play. In the past, GFCE worked well in 14.04 LTS; however, my recent attempts to use it on 14.04 LTS were unsuccessful and thus I removed it from that system. So GFCE seems to work well only on 12.04 LTS systems at this time. I basically keep it around because it allows full-screen play.

Those are the emulators that I've been using with Ubuntu. Now I want to wrap this up with a few words about gamepad controllers. Since the days I used Macs, I've been using the Gravis gamepad pros – a company absorbed by Kensington years ago. When I started getting into emulation again, I picked up two of them from eBay. They work well and are

inexpensive, but I began craving a controller with more... um... control. After some reading and posting on the Ubuntu forums, two controllers came to the forefront – and I was looking for the more inexpensive wired usb controllers. The Microsoft Xbox controller and the Logitech f310 gamepad were the frontrunners. I couldn't stand the thought of purchasing something from Microsoft, so Logitech it was. I found a refurbished f310 on Amazon for around \$10 plus shipping, so I pulled the trigger on it. I was most impressed with this gamepad, and, even though refurbished, it looks new. It was much more accurate than the gravis gamepads and it has a high quality feel. I ordered another one and it was equally nice. Both gamepads work with the emulators without any needed software or drivers. I have used a friend's wireless Xbox controller with the emulators. It works very well; however, I could not get the joystick on it to work. The Logitech F310 has a mode button to quickly switch between joystick and d-pad. One advantage of the Xbox controller, that I've read, is that it has levels of sensitivity in the joystick for non-emulator/native games like first person shooter

games. This feature isn't needed in emulators though, because these classic game consoles didn't have such an advanced feature in their controllers.



Who are you? Who will you become? Where do you come from? Where are you going? Who put us here?

These are but a minuscule grain of questions either asked, insinuated or derived from the game The Talos Principle which was simultaneously released on December 2014 for Microsoft Windows, OS X & Linux. The Talos Principle is a first-person puzzle game developed by Croatia's Croteam and distributed by Devolver Digital. The game aims at making the player think not only through the puzzles it offers, but also through the story-line which is very philosophical in nature. When you first begin the game, in its default first-person view, it seems like you play the role of a human being awakened in an ancient Greek city-state, but, after solving a handful of puzzles, you begin to question your own existence as it is hinted that perhaps you're either a robot or a computer program which was created by.....? Well, that's yet another question the game forces you to ask – who

created you?

The Talos Principle can be bought for around \$40 by going to www.croteam.com/talosprinciple/, or from Steam. There's also a demo available with only four puzzles – that will leave you wanting more. By the time I found out that I could have installed the demo, I had already solved twice as many puzzles as the ones included in the demo.

Originally conceived to be played on computers, The Talos

Principle can best be played with a mouse/keyboard but there's also the option of using a game controller if you're so inclined. Movement is controlled via the standard WASD keys and to look around you use the mouse. The mouse's left-click/right-click buttons are used to interact with various objects throughout the game. If you like Portal or other similar puzzle games, then you'll feel right at home with The Talos Principle. Being a fan of the Portal games and having seen the overly positive response from critics and

players around the world, I decided to buy The Talos Principle. It was money well spent. Since I bought the game, there has been one more DLC released, The Road to Gehenna, which includes more playable content and is selling for around \$15 at the time of this writing. However, there are other DLC packages available which are smaller in both size and price.

Playing The Talos Principle is pretty straightforward for anyone who's ever played a first-person shooter in the past. The main difference is that you're not shooting anything. At the beginning of the game, you walk around what seem to be ancient Greek ruins in search of tetromino (think Tetris) shaped "sigils" which you must collect. However, your quest becomes much more demanding because, in order for you to reach each one of these sigils, you have to avoid being spotted by sphere-shaped drones and wall-mounted turrets, both of which will fire at you if they happen to spot you. It's literally impossible to reach the sigils



without setting off either a spherical drone or a stationary turret; so, in order to advance, you have to find and pick up portable, yellow jammers which will jam the drones or turrets thus rendering them useless. These yellow jammers also work on some seemingly electric gates that, unless deactivated, will not let you through. The real challenge is using the jammers properly to reach each one of the sigils. Some levels, for example, will have one spherical drone, one turret and one electric gate, but only two jammers, so it's up to you to figure out how to make two jammers work against three devices when each jammer can work against only one device at a time. Eventually,

there are other devices introduced, both as tools you get to use or obstacles you need to overcome.

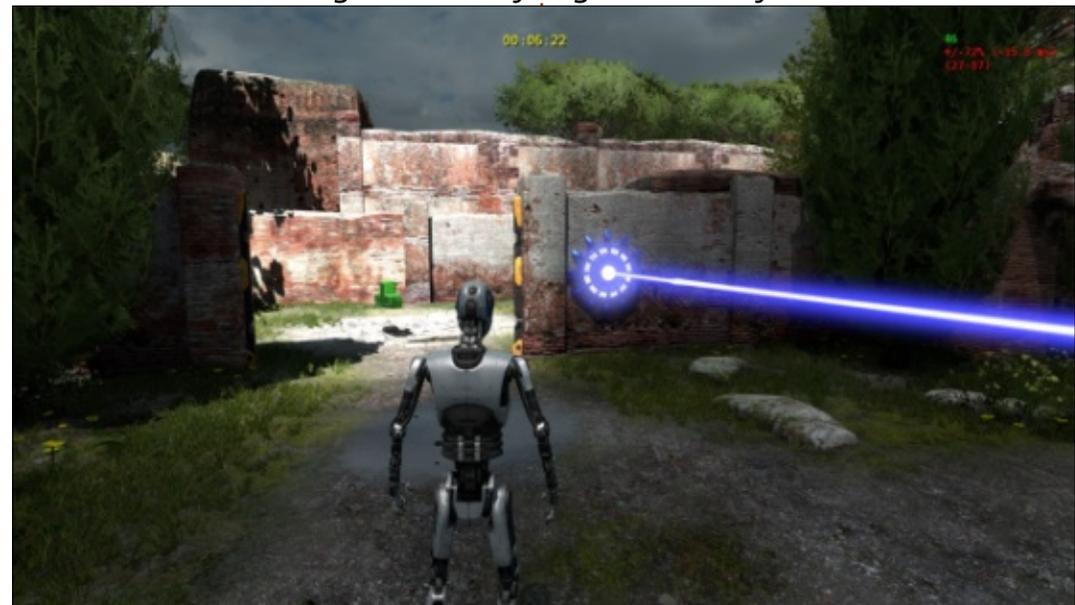
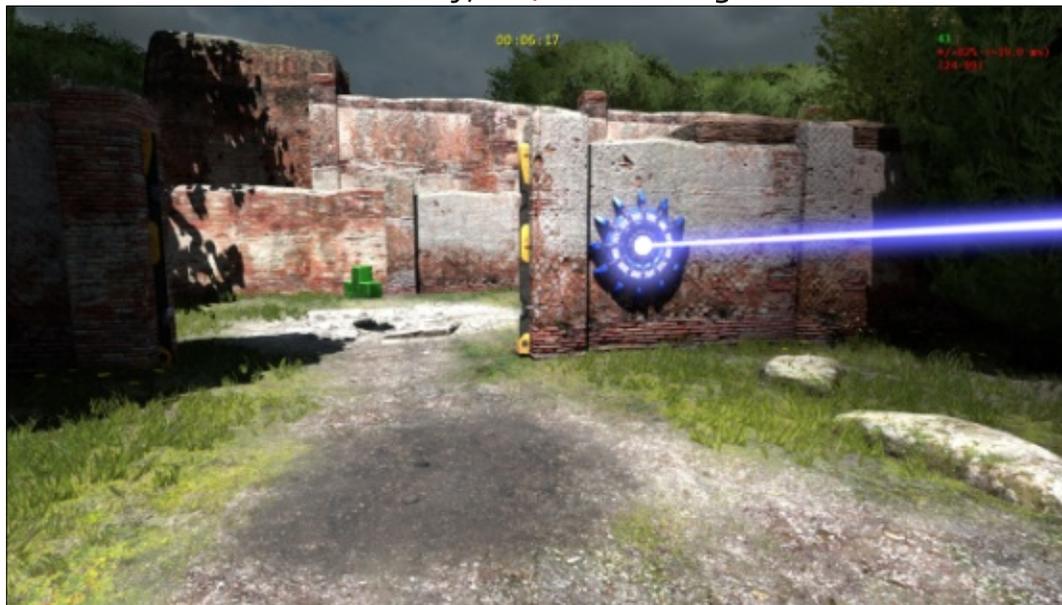
The color-coded sigils you collect are also part of a greater puzzle. For example, some doors can be opened only by solving a sigil puzzle. Also, there are elevators that cannot be accessed unless you solve these sigil puzzles. When you have collected all sigils of the same color for a particular puzzle, then, when you reach its pertaining door or elevator, you will be required to solve the puzzle in order to make the door or elevator functional.

To solve these sigil puzzles you must arrange the tetrominos in

such a way as to form a square, rectangle or whatever shape is presented to you. After completing a fair number of puzzles, you begin to see that all along you've been playing in the first of four worlds. Your quest begins in world A, but when you unlock the first elevator you're able to reach worlds B, C and Elohim's Temple Tower, which is forbidden to you when you first discover it.

The Talos Principle feels as if it were made to be played on Ubuntu. I encountered zero glitches on this game. There were some random graphics & sonic static stuttering that, at first, I thought were glitches but turned out to be hints relating to the story

and intended to make you question the reality of your surroundings. The graphics, though not extraordinary, were above average, and in fact every now and then had an uplifting ray of sunshine or a dark depressing storm which most certainly affected my mood. It almost feels like it would be a crime to not have The Talos Principle available for Linux since you're constantly interacting with computer terminals that not only look but also work very much like a common Linux terminal. These terminals serve to better develop the story as you progress through the levels. Although the interaction with these terminals can be completely ignored if all you want is to solve



the puzzles, it is through these terminals that the story is being told and it is through this story-telling that life's deepest questions remain with you even after you exit the game. The main story-line is of a deeply philosophical nature and this is enhanced by the meditative soundtrack which is ideal for problem solving and for pondering life's greatest mysteries.

As much as I like playing first-person games, I cannot play them for an extensive amount of time because I, like many other people, suffer from the motion sickness associated with FPS games. The Talos Principle has a medically comforting solution for the motion sickness problem by switching the game from a first-person perspective to a third-person perspective. If you suffer from motion sickness with FPS games, or you just prefer to look at your robot while playing the game, all you have to do is go into "Options," then you'll find a section fittingly labeled "Motion Sickness Options" which can be automatically set to minimize motion sickness, or you can fine-tune it by adjusting the available parameters, one of which is setting it to either first-person

perspective, looking over right shoulder, or looking over left shoulder. Other options that caught my attention were the ability to run a benchmark as well as the option of showing the frames-per-second on the top right corner of the screen. The commonly found options of "graphics, sound, mouse/keyboard, controller and language" are also available along with the DLC, Workshop and Reward options. All in all, the added extras take The Talos Principle from being a great game to an excellent game.

I strongly recommend The Talos Principle after playing it over the last couple of months. It is an entertaining game that will challenge you in ways you never expected. Solving each puzzle gives you a deep sense of accomplishment, and, instead of making you put it away for another day, a puzzle solved encourages the player to keep playing and solve yet another puzzle. It plays remarkably well on Ubuntu via mouse/keyboard, but may require a compatible game controller if that is your cup of tea. Puzzles can be solved in a matter of minutes, which keeps the game's progress moving at a fast pace. The

underlying story-line, which ties the puzzles together while also giving them more meaning, will indubitably make the player ponder humanity's ancient philosophical questions as they intertwine with sci-fi's ethical & improbable controversies. If you want a second opinion you will discover that critics have given The Talos Principle high scores across the board.



MINIMUM SYSTEM REQUIREMENTS:

- OS: Linux Ubuntu 12.04.
- Processor: Dual-core 2.2 GHz.
- Memory: 2 GB RAM.
- Graphics: nVidia GeForce 8600/9600GT 512MB VRAM, ATI/AMD Radeon. HD2600/3600 512MB VRAM.
- Hard Drive: 5 GB available space.
- Sound Card: OpenAL Compatible Sound Card.
- Additional Notes: OpenGL: 2.1 or higher.



Oscar graduated from CSUN, is a Music Director/Teacher, beta tester, Wikipedia editor, and Ubuntu Forums contributor. You can contact him via: www.gplus.to/7bluehand or email: 7bluehand@gmail.com



PATRONS

PATRONS

Bill Berninghausen
Jack McMahon
Linda P
Remke Schuurmans
Norman Phillips
Tom Rausner
Charles Battersby
Tom Bell
Oscar Rivera
Alex Crabtree
John Malon
Ray Spain
Richard Underwood
Charles Anderson
Ricardo Coalla
Chris Giltname
William von Hagen
Mark Shuttleworth
Juan Ortiz
Joe Gulizia
Kevin Raulins
Doug Bruce
Pekka Niemi
Rob Fitzgerald
Brian M Murray
Roy Milner
Brian Bogdan
Scott Mack
Dennis Mack
John Helmers

DONATIONS

John Niendorf
Daniel Witzel
Douglas Brown
Donald Altman
Patrick Scango
Tony Wood
Paul Miller
Colin McCubbin
Randy Brinson
John Fromm
Graham Driver
Chris Burmajster
Steven McKee
Manuel Rey Garcia
Alejandro Carmona Ligeon



CHA CHA CHA CHANGES

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

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

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

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

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

<https://www.patreon.com/fullcirclemagazine>



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