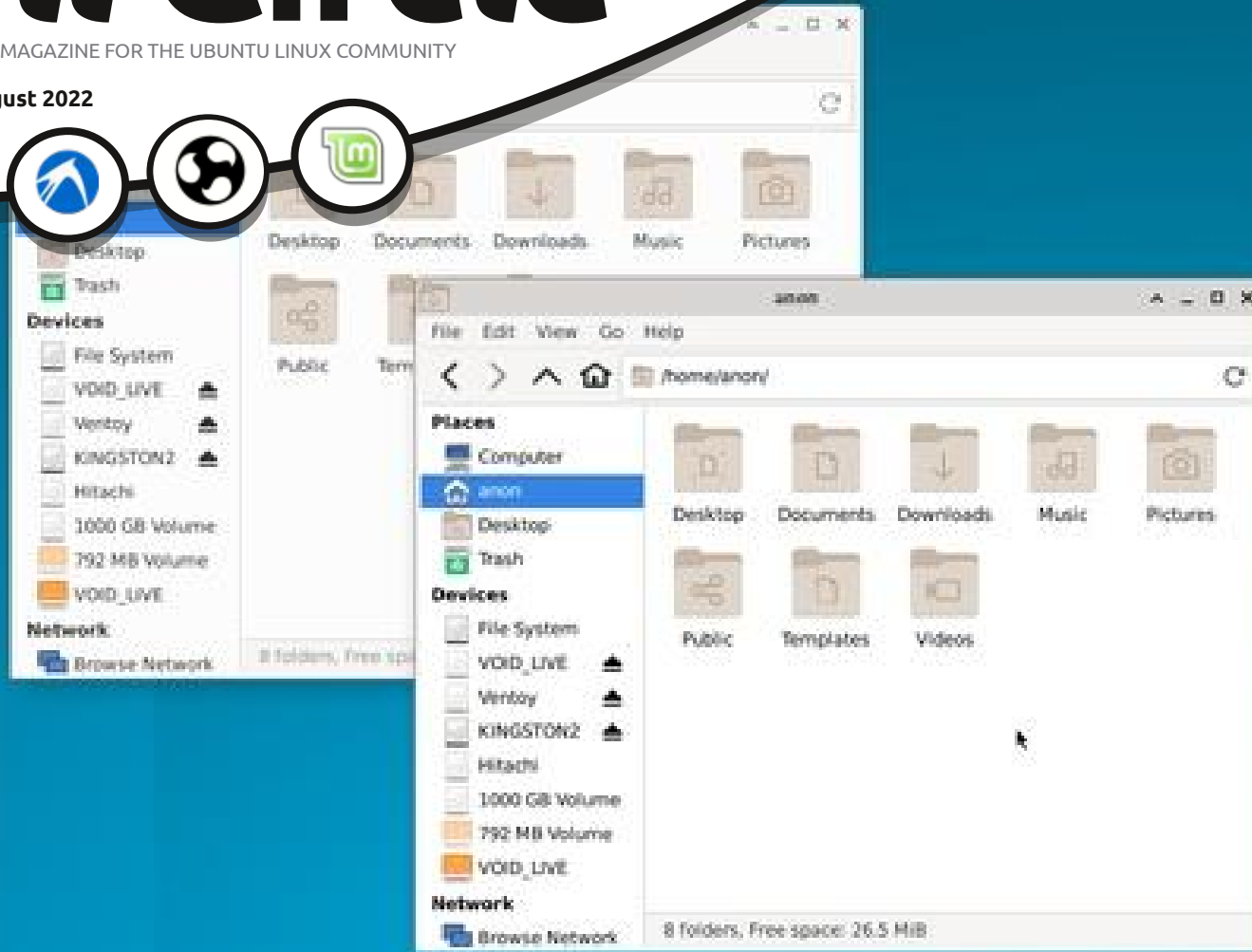




Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

ISSUE #184 - August 2022



VOID LINUX YET MORE NON-DEBIAN DISTROS

Full Circle Magazine is neither affiliated with, nor endorsed by, Canonical Ltd.

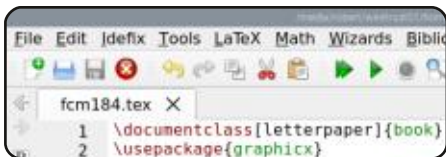
HowTo



Bash to Python p.20



Migrating from VAX/VMS p.23



Latex p.26



p.XX



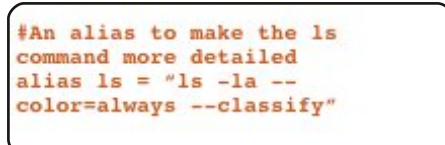
Inkscape p.29

Graphics



Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY



Command & Conquer p.17



... p.XX



Ubuntu Devices p.XX



The Daily Waddle p.33



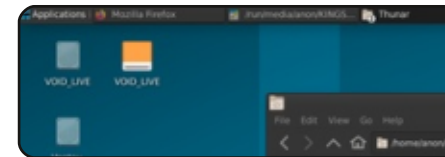
My Opinion p.41



Letters p.XX



Q&A p.53



Review p.48



Linux News p.04



Everyday Ubuntu p.34



Micro This Micro That p.XX



Review p.44



Ubuntu Games p.56



The articles contained in this magazine are released under the Creative Commons Attribution-Share Alike 3.0 Unported license. This means you can adapt, copy, distribute and transmit the articles but only under the following conditions: you must attribute the work to the original author in some way (at least a name, email or URL) and to this magazine by name ('Full Circle Magazine') and the URL www.fullcirclemagazine.org (but not attribute the article(s) in any way that suggests that they endorse you or your use of the work). If you alter, transform, or build upon this work, you must distribute the resulting work under the same, similar or a compatible license.

Full Circle magazine is entirely independent of Canonical, the sponsor of the Ubuntu projects, and the views and opinions in the magazine should in no way be assumed to have Canonical endorsement.



WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

Another not quite full quota this month. With only Latex and Inkscape. Greg has had to take a (well deserved) month off. So no Python or Micro articles this month. But we do still, technically speaking, have some Python for you. It's an article about converting Bash scripts to Python. One HowTo article (VAX-VMS to Linux) is a new part to an old series that featured waaaaay back several years ago. So don't get confused when you see 'Pt.7' and think '*I don't remember one through six!*'. It's OK. You're not losing your marbles.

Adam's reviews continue with Xubuntu and Void Linux. I have to admit, I'd never heard of Void Linux before Adam sent over the review. Always good to see new distros, but does it bring anything new to the table? I'll let you read the article and find out. Oh, and Richard continues his Everyday Ubuntu series with a look at making diagrams.

I take full responsibility this month for any goofs. Even though our amazing proof-readers read through most of the articles, I was offline for a couple of weeks so I've had to rush this PDF to get it out on time.

Don't forget: if you're looking for some help, advice, or just a chit chat: remember, we have a **Telegram** group: <https://t.me/joinchat/24ec1oMFO1ZjZDc0>. I hope to see you there. Come and say hello.

Anyway, all the best, and stay safe!

Ronnie

ronnie@fullcirclemagazine.org



This magazine was created using :



Find Full Circle on:



facebook.com/fullcirclemagazine



twitter.com/#!/fullcirclemag



<http://issuu.com/fullcirclemagazine>



<https://mastodon.social/@fullcirclemagazine>

Weekly News:



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



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



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

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



NsCDE 2.2 RELEASED:

July 25

The NsCDE 2.2 (Not so Common Desktop Environment) project, who develop a CDE (Common Desktop Environment) desktop environment, adapted for use on modern Unix-like systems and Linux, has been published. The environment is based on the FVWM window manager with the theme of design, applications, patches and superstructures for recreating the original CDE desktop. The project code is distributed under the GPLv3 license. The add-in is written in Python and Shell. Installation packages are available for Fedora, openSUSE, Debian and Ubuntu.

The goal of the project is to provide a comfortable environment for fans of retro desktops, supporting modern technology and not causing discomfort due to the lack of functionality. The user-styled CDE applications, design generators for Xt, Xaw, Motif, GTK2, GTK3, and Qt5 have been prepared to stylize the design of most programs using the X11.

NsCDE allows you to link the design of CDE and modern technologies, such as font routing using XFT, Unicode, dynamic and functional menus, virtual desktops, applets, desktop wallpapers, design/pictogram themes, etc.

<https://github.com/NsCDE/NsCDE/releases/tag/2.2>

D-INSTALLER 0.4 FOR SUSE:

July 25

The developers of the YaST installer, used in openSUSE and SUSE Linux, published an update of the experimental installer D-Installer 0.4, which supports the management of the installation through a web interface. Installation images were prepared to familiarize themselves with the capabilities of D-Installer and provide tools for installing the continuously updated edition of openSUSE Tumbleweed, as well as releases Leap 15.4 and Leap Micro 5.2.

D-Installer means separating the

user interface from the internal components of the YaST and providing the possibility of using various frontends. YaST libraries continue to be used to install equipment, hardware checks, disk breakdowns and other functions required for installation, YaST libraries, on top of which an interlayer abstracts access to libraries through the unified D-Bus interface.

The new version of D-Installer implements a multiprocess architecture, which, thanks to the interface, the interaction with the user is no longer blocked during the execution of other processes in the installer, such as reading metadata from the repository and installing packages. They introduced three internal stages of installation: start the installer, setup of installation parameters and the installation itself.

Also, work is being done on the creation of a minimalistic system image that launches the installer. The main idea in the layout of the installer components in the form of

a container and the use of a special initrd-death Iguana loading to start the container. At the moment, YaST modules have already been adapted for work from the container to customize time zones, keyboard, language, firewall, printing system, DNS, program management, repositories, users and groups.

<https://yast.opensuse.org/blog/2022-07-19/yast-report-2022-5>

FEDORA INTENDS TO BAN THE SUPPLY OF SOFTWARE DISTRIBUTED UNDER THE CC0 LICENSE:

July 25

Richard Fontana, one of the authors of the GPLv3 license, working as an open-source and patent consultant at Red Hat, has announced plans to amend the Fedora project rules prohibiting the inclusion of software in the repository supplied under the Creative Commons CC0 license. The

CC0 license implies the author's waiver of its rights and distribution as a public domain, which allows you to distribute, modify and copy the Software without any conditions.

The reason for the ban is CC0's uncertainty about software patents. The CC0 license text contains a clause that clearly indicates that the license does not affect the patent rights and trademark rights that may be used in the application. The possibility of influence through patents is considered a potential threat, so licenses that do not explicitly provide the possibility of using patents or waive patents are considered as not classified as in the category of open and free (FOSS).

The ability to place contents in repositories under the CC0 license not related to the code will be left. For packages with code already placed in the Fedora repositories supplied under the CC0 license, they will make an exception and allow delivery to continue. The inclusion of new packages with a code supplied under the CC0 license will be prohibited.

<https://lists.fedoraproject.org/archives/list/legal@lists.fedoraproject.org/thread/RRYM3CLYJYW64VSQIXY6IF3TCDZGS6LM/>

RELEASE OF CDE 2.5.0:

July 26

The classic industrial desktop environment CDE 2.5.0 (Common Desktop Environment) has been released. CDE was developed in the early 1990s by the joint efforts of Sun Microsystems, HP, IBM, DEC, SCO, Fujitsu and Hitachi, and for many years acted as the regular graphics environment of Solaris, HP-UX, IBM AIX, Digital UNIX and UnixWare. In 2012, CDE 2.1 was opened by the LOP Group consortium under the LGPL license.

The CDE source code includes an XDMCP-compatible input manager, user session manager, window manager, CDE FrontPanel panel, desktop manager, interprocess interface, desktop tools, tools for shell and Ci application development, components for third-party integration. To build it, you need to have a library of

elements of the Motif interface, which has been translated into the category of free projects following the CDE.

<https://sourceforge.net/p/cdesktopenv/mailman/message/37684830/>

DEBIAN SUED THE DOMAIN DEBIAN.COMMUNITY, WHICH PUBLISHED A CRITIQUE OF THE PROJECT:

July 25

The Debian project, the non-profit organization SPI (Software in the Public Interest) and Debian.ch, representing Debian in Switzerland, won the proceedings at the World Intellectual Property Organization (WIPO) related to the debian.community domain, which ran a blog critical of the project and its participants, and also brought to the public confidential discussions from the debian-private mailing list.

Unlike the failure of a similar proceeding initiated by Red Hat about the WeMakeFedora.org domain, the claims related to

debian.community were found to be justified and the transfer of rights to the debian.community domain to the Debian.community project was resolved. The decommissioning of the Debian trademark is a formal motive for the transfer of the domain. The author of the site debian.community announced that he registered for the continuation of the publication of the new site - "suicide.fyi," which will continue to publish criticism of Debian.

<https://suicide.fyi/debian/urgent-domain-stolen-use-new-url-asap-new-debian-private-leaks/>

LATTE DOCK ANNOUNCED THE TERMINATION OF THE PROJECT:

July 26

Michael Vourlakos has announced the termination in the development of the Latte Dock project, an alternative dock for KDE. The reason is the lack of free time and the loss of interest in further work on the project. Michael planned to leave the project and transfer it to other hands after the release of 0.11, but

eventually decided to leave earlier. It is not yet clear whether anyone can pick up the development - Michael made an overwhelming number of changes. The list of changes notes the activity of several more people, but their contribution is minimal and limited to individual corrections.

The Latte panel was founded as a result of the merger two panels - Now Dock and Candil Dock. As a result of the merger, an attempt was made to have a panel, working separately from Plasma Shell, with the original Now Dock design of the interface and the use of only KDE and Plasma libraries without third-party dependencies. The panel is based on the KDE Framework and Qt library, supports integration with the KDE Plasma desktop and implements the effect of parabolic macOS pictograms or the Plank

panel. The project code is distributed under the GPLv2 license.

<https://psifidotos.blogspot.com/2022/07/latte-dock-farewell.html>

OPENMANDRIVA STARTS TESTING THE OPENMANDRIVA LX ROME ROLLING:

July 27

The developers of the OpenMandriva project presented a preliminary release of a new version of the OpenMandriva LX ROME distribution, which uses a model of continuous delivery of updates (rolling-release). The proposed edition allows you to access new versions of packages developed for the OpenMandriva

LX 5.0 branch. For download, an iso-image of 2.6 GB with a KDE desktop with a KDE desktop, supported the download in Live mode, prepared for download.

In the new versions of the packages in the OpenMandriva LX ROME build, there is - the kernel 5.18.12 (assembled with Clang), Python 3.11, Java 20, KDE Frameworks 5.96.0, Plasma Desktop 5.25.3 and KDE Gear 22.04.2.

Reorganization of the file system structure - all executable files and libraries from the root directories are transferred to the /usr section (categories /bin, /sbin and /lib* are designed as symbolic links to the corresponding directories inside /usr). Support for installation on partitions with BTRFS and XFS FS has been resumed. In addition to the default file manager dnf4 as alternatives, dnf5 and zypper are

offered.

<https://www.openmandriva.org/en/news/article/openmandriva-lx-rome-rolling-technical-preview>

UPDATING CLAMAV 0.103.7, 0.104.4 AND 0.105.1:

July 27

Cisco has released new versions of the free antivirus package ClamAV 0.105.1, 0.104.4 and 0.103.7. The project came to the hands of Cisco in 2013 after the acquisition of Sourcefire, which develops ClamAV and Snort. The project code is distributed under the GPLv2 license. The 0.104.4 release will be the last update in the 0.104 branch, and 0.103 will be classified as LTS and will be accompanied until September 2023. There is a long list of changes on the website.

<https://blog.clamav.net/2022/07/clamav-01037-01041-and-01051-patch.html>



DistroWatch.com

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

FEDORA LINUX 37 PLANS TO STOP SUPPORTING ROBOTICS, GAMES ETC:

July 27

Ben Cotton, Fedora Program Manager at Red Hat, announced his intention to stop the creation of alternative live distributions - Robotics Spin (applications and simulators for robot developers), Games Spin (with a selection of games) and Security Spin (with a set of security check tools), due to the termination of the communication of accompanying or unwillingness. If there are those who wish to take the support of these spins in their own hands, their delivery will be continued (currently, applicants have already been found ready to continue the support of the Security and Games editions).

<https://lists.fedoraproject.org/archives/list/devel@lists.fedoraproject.org/thread/YXENHLWNVIAOYQQ746KZYRIXYQW6E2FA/>

VULNERABILITY IN SAMBA:

July 28

The corrective releases of Samba 4.16.4, 4.15.9 and 4.14.14 with the elimination of 5 vulnerabilities have been published. The release of package updates in distributions can be traced on: Debian, Ubuntu, Gentoo, RHEL, SUSE, Arch, FreeBSD.

The most dangerous vulnerability (CVE-2022-32744) allows Active Directory domain users to change the password of any user, including the administrator password and get full control of the domain. The problem is because KDC accepts kpasswd requests encrypted with any known key.

An attacker with access to the domain can send a fictitious request for a new password on behalf of another user, encrypting it with his key, and KDC will process it without verifying the compliance of the account key. Other than the sending of fictitious requests, it can be used to send dummy requests keys of domain controllers working in read mode only (RODC), which do not have the authority to change passwords. As a bypass method of

protection, you can disable support for the kpasswd protocol by adding a string "kpasswd port" to smb.conf.

https://www.samba.org/samba/latest_news.html#4.16.4

VENTOY 1.0.79:

July 28

The release of Ventoy 1.0.79 tools, designed to create boot USB devices, including multiple operating systems, is out. It allows you to download the OS from unchanged ISO, WIM, IMG, VHD and EFI images, without requiring unpacking the image or reformatting the device. For example, it is enough to simply copy to USB Flash with the Ventoy downloader, a set of iso-images and Ventoy will provide the ability to load the operating systems inside. At any time, you can replace or add new iso-images simply by copying new files, which is convenient for testing and previewing various distributions and operating systems. The project code is written in C and distributed under the GPLv3 license.

Ventoy supports downloads on systems with BIOS, IA32 UEFI, x86_64 UEFI, ARM64 UEFI, UEFI Secure Boot and MIPS64EL UEFI with tables of MBR or GPT partitions. It also supports the download of various options - Windows, WinPE, Linux, BSD, ChromeOS, as well as images of virtual machines in Vmware and Xen. The developers tested Ventoy with more than 940 iso-atures, including various versions of Windows and Windows Server, several hundred Linux distributions (there are declared to check 90% of the distributions presented on distrowatch.com), more than a dozen BSD systems (FreeBSD, DragonFly BSD, pfSense, FreeNAS, etc.).

In addition to USB-drives, Ventoy's USB bootloader can be installed on a local drive, SSD, NVMe, SD card and other types of drives that use FAT32, exFAT, NTFS, UDF, XFS or Ext2/3/4 file systems. There is an automated installation mode of the operating system in one file on a portable media with the ability to add your files to the created environment (for example, to create images from Windows or Linux-distributes that do not support Live mode).

The new version added support for the Fedora CoreOS. The boot image of Super-UEFI in Secure Boot-Disk, used to run unsigned EFI programs and operating systems in UEFI Secure Boot mode, is returned to version 3.3. The number of supported ISO-images has been brought to 940. Problems with the kickstart mode in distributions based on RHEL have been solved.

<https://github.com/ventoy/Ventoy/releases/tag/v1.0.79>

RELEASE OF OPNSENSE 22.7:

July 28

The release of OPNsense 22.7, which is an offshoot of the pfSense project, created to form a fully open distribution that could have functionality at the level of commercial solutions for deploying firewalls and network gateways, is out. Unlike pfSense, the project is positioned as not controlled by one company, developed with the direct participation of the community and with a fully transparent development process, as well as providing the ability to use any of

its developments in third-party products, including commercial products. The original code of the distribution components, as well as the tools used for assembly, are distributed under the BSD license. The builds are prepared in the form of LiveCD and a system image for Flash drives (347 MB).

The distribution provides means of creating fault-tolerant configurations based on the use of the CARP protocol and allow you to run in addition to the main firewall, a spare node, which will be automatically synchronized at the configuration level and will take on the load in case of failure of the primary node. For the administrator, a modern and simple interface is offered to configure the firewall, built using the bootstrap web-framework.

<https://forum.opnsense.org/index.php?topic=29507.0>

RELEASE OF FREERDP 2.8.0:

July 29

A new release of the FreeRDP 2.8.0 project has been released,

offering free implementation of the remote access protocol to the RDP Desktop Protocol, developed on the basis of Microsoft specifications. The project provides a library to integrate RDP support into third-party applications and a client that can be used for remote connection to the Windows desktop. The project code is distributed under the Apache 2.0 license.

<https://github.com/FreeRDP/FreeRDP/releases/tag/2.8.0>

RELEASE PAPERLESS-NGX 1.8.0:

July 30

A new release of Paperless-ngx, a web application for document management that converts paper documents into electronic, available for full-text search, downloading and storage online is available. The code is written in Python using the Django framework and distributed under the GPLv3 license. Demo's at demo.paperless-ngx.com (login/palog - demo/demo) is available to familiarize yourself with the capabilities of the system.

Paperless-ngx is an offshoot of the paperless-ng project, which, in turn, branched off the original paperless project (forks were created to continue development after the completion of the support of past developers). After downloading the scanned document in any available way (by FTP, via the web interface, through the Android application, by e-mail via IMAP), the program performs optical text recognition (OCR), using the Tesseract engine, then tagging (including automatic using machine learning), full-text search, as well as downloading a version of the document in PDF/A format or in one of the office packages available.

<https://github.com/paperless-ngx/paperless-ngx/>

4MLINUX 40.0:

July 31

The release of 4MLinux 40.0, a minimalistic user distribution that is not derived from other projects and uses a graphical environment based on JWM, is out. 4MLinux can be used not only as a

Live environment to play media files and other user tasks, but also as a system for recovery after failures and a platform for running LAMP servers (Linux, Apache, MariaDB and PHP). Two iso-image (1.1 GB, x86_64) with a graphical environment and a selection of programs for server systems has been prepared for download.

<https://4mlinux-releases.blogspot.com/2022/07/4mlinux-400-stable-released.html>

LINUX MINT 21:

July 31

The release of Linux Mint 21, which has been transferred to the Ubuntu 22.04 LTS package database, is out. The distribution is fully compatible with Ubuntu, but is significantly different from the approach to the layout of the user interface and the selection of default applications. Linux Mint developers provide a desktop environment that meets the classic canons of desktop layouts, which is more familiar to users who do not accept new methods of building the GNOME 3 interface. DVDs

based on MATE 1.26 (2 GB), Cinnamon 5.4 (2 GB) and Xfce 4.16 (2 GB) are available for download. The Linux Mint 21 is included in the long-term releases (LTS), which will be updated until 2027.

<https://blog.linuxmint.com/?p=4358>

RELEASE OF Q4OS 4.10:

Aug 1

The release of Q4OS 4.10, based on Debian and supplied with KDE Plasma and Trinity desktops, has been published. The distribution is positioned as lightweight and offering a classic desktop design. It includes several proprietary applications, including 'Desktop profiler' for quick installation of thematic software sets, 'Setup utility' to install third-party applications, 'Welcome Screen' to simplify the initial configuration, scripts for installing alternative environments LXQT, Xfce and LXDE. The bootable image size is 1.2 GB (x86_64, i386). The new release synchronized the package base with Debian 11.4. Desktop Trinity has been updated until the release of 14.0.12.

<https://www.q4os.org/blog.html>

RELEASE OF UBUNTU SWAY REMIX 22.04 LTS:

08/08/2022

Ubuntu Sway Remix 22.04 LTS, that provides a pre-configured and ready-to-use desktop based on the mosaic composite manager Sway, is available for download. The distribution is an unofficial edition of Ubuntu 22.04 LTS, created with an eye on both experienced users of GNU/Linux and beginners who want to try the environment of mosaic window managers without the need for their long setup. For download, builds for amd64 and Raspberry Pi 3/4 are available.

The distribution environment is built on Sway - a composite manager using the Wayland protocol and fully compatible with the mosaic window manager i3, as well as the Waybar panel, PCManFM-GTK3 file manager, and utilities from the NWG-Shell project, such as the Azote desktop wallpaper manager, full-screen nwg-drawer application menu, and the nwamp screen content on the

screen is displayed on the nwg, the GTK theme setting manager, the morsator and nwg-look fonts and the Autotiling script, which automatically composes the open applications window in the manner of dynamic mosaic window managers.

<https://github.com/Ubuntu-Sway/Ubuntu-Sway-Remix>

RELEASE OF NFTABLES 1.0.5:

08/10/2022

The new nftables 1.0.5, unifying packet filter interfaces for IPv4, IPv6, ARP and network bridges (targeted to replace iptables, ip6table, arptables and ebtables), is out. At the same time, the accompanying libnftnl 1.2.3 library was published, providing a low-level API for interaction with the nf_tables subsystem.

The nftables package includes packet filter components that work in the user's space, while at the kernel level is provided by the nf_tables subsystem, which is part of the Linux kernel starting from release 3.13. At the kernel level, only a common interface is

provided, independent of a specific protocol and providing basic functions to extract data from packets, perform data operations and flow control.

Directly filtering rules and protocol-specific handlers are compiled into the bytecode in the user's space, after which the bytecode is loaded into the kernel using the Netlink interface and executed in the kernel in a special virtual machine reminiscent of BPF (Berkeley Packet Filters). This approach allows you to significantly reduce the size of the filter code, working at the core level and carry all the functions of parsing rules and logic of working with protocols into the user's space

<https://www.mail-archive.com/netfilter-announce@lists.netfilter.org/msg00246.html>

GOOGLE HAS EXPANDED THE PROGRAM TO STIMULATE THE DETECTION OF VULNERABILITIES IN THE LINUX KERNEL

08/10/2022

Google has announced an expansion of the initiative to pay cash rewards for identifying vulnerabilities in the Linux kernel. The maximum amount of payment for the new vulnerability and the creation of a working exploit on its basis increased from 91 to 133 thousand dollars. In addition to the previously used kCTF (Kubernetes Capture the Flag) for hacking attempts, new environments were proposed: based on the last stable branch of the usual Linux kernel and on a branch of the core, which includes additional patches to block the typical methods of operation of exploits.

For the creation of exploits that hit an environment with a fresh stable branch of the core, an additional reward of \$21 thousand is paid. Hacking the environment with expanded protection measures, you can be paid another \$21 thousand dollars. The proposed

expanded protection measures are able to block 9 of the 10 vulnerabilities received last year and 10 of the 13 exploits applying for remuneration.

<https://security.googleblog.com/2022/08/making-linux-kernel-exploit-cooking.html>

THE LINUX KERNEL REVEALS EXPLOITED VULNERABILITIES IN POSIX CPU TIMER, CLS_ROUTE AND NF_TABLES

08/11/2022

The Linux kernel revealed several vulnerabilities caused by accessing already freed areas of memory and allowing a local user to increase their privileges in a system. For all the problems under consideration, working prototypes of exploits have been created, which will be published a week after the publication of information on vulnerabilities. Patches with troubleshooting were sent to Linux kernel developers. CVE-2022-2588 , CVE-2022-2586 , CVE-2022-2585.

<https://www.openwall.com/lists/oss-security/2022/08/09/6>

OPEN-BASED HEROES OF MIGHT AND MAGIC 2 - FHEROES2 - 0.9.18

08/08/2022

A new release of fheroes2 0.9.18, which recreates the engine of Heroes of Might and Magic II from scratch is available. The project code is written in C++ and distributed under the GPLv2 license. To start the game, it requires files with the original game resources that can be obtained, for example, from the demo version of Heroes of Might and Magic II or from the original game. Highlight is that the diplomatic option now works as in the original.

<https://github.com/iHub/fheroes2/releases/tag/0.9.18>

SQUIP - AN ATTACK ON AMD PROCESSORS THAT LEADS TO DATA LEAKAGE THROUGH THIRD-PARTY CHANNELS

08/12/2022

A group of researchers from the Graz Technical University (Austria), formerly known for the development of MDS, NetSpectre, Throwhammer and ZombieLoad attacks, revealed information about a new method of attack on third-party channels (CVE-2021-46778) on the queue of the AMD processor planner, used to plan the execution of instructions in different executive units of the CPU. The attack, called SQUIP, allows you to determine the data used in the calculations in another process or virtual machine or organize a hidden communication channel between processes or virtual machines, allowing you to exchange data bypassing the system access demarcation mechanisms.

In the experiment, the researchers were able to fully recreate the closed 4096-bit RSA key used to create digital signatures using the mklogbedTLS

3.0 cryptographic library, in which the Montgomery algorithm is used for the construction of a number to the modulization. To determine the key, it was necessary to perform 50,500 traces. The total time of the attack took 38 minutes. Search options are demonstrated, providing leakage between different processes and virtual machines controlled by the KVM hypervisor. It is also shown that the method can be used to make hidden data transfer between virtual machines at a speed of 0.89 Mbit/s and between processes at a speed of 2.70 Mbit/s at an error level of less than 0.8%.

<https://stefangast.eu/papers/squip.pdf>

RELEASE OF GNU BINUTILS 2.39:

08/13/2022

A new release of the set of GNU Binutils 2.39 system utilities has been published, which includes programs such as GNU linker, GNU assembler, nm, objdump, strings, strip.

This release contains numerous

bug fixes, and also the following new features:

- * The ELF linker will now generate a warning message if the stack is made executable. Similarly it will warn if the output binary contains a segment with all three of the read, write and execute permission bits set. These warnings are intended to help developers identify programs which might be vulnerable to attack via these executable memory regions. The warnings are enabled by default but can be disabled via a command line option. It is also possible to build a linker with the warnings disabled, should that be necessary.

- * The ELF linker now supports a --package-metadata option that allows embedding a JSON payload in accordance to the Package Metadata specification.

- * In linker scripts it is now possible to use TYPE=<type> in an output section description to set the section type value.

- * The objdump program now supports coloured/colored syntax highlighting of its disassembler output for some architectures. (Currently: AVR, RiscV, s390, x86,

x86_64).

- * The nm program now supports a --no-weak/-W option to make it ignore weak symbols.

- * The readelf and objdump programs now support a -wE option to prevent them from attempting to access debuginfod servers when following links.

- * The objcopy program's --weaken, --weaken-symbol, and --weaken-symbols options now works with unique symbols as well.

<https://www.mail-archive.com/info-gnu@gnu.org/msg03078.html>

RELEASE OF TOYBOX 0.8.8:

08/13/2022

The set of system utilities, Toybox 0.8.8, as well as BusyBox, designed as a single executable and optimized for the minimum consumption of system resources, is out. The project is being developed by the former BusyBox maininer and is distributed under the BSD license. Toybox is used for most of Android's command line tools in all currently

supported Android versions, and is also used to build Android on Linux and macOS. All of the tools are tested on Linux, and many of them also work on BSD and macOS. Toybox is lagging behind BusyBox, but 306 base commands (227 are fully and partially completed) of the 378 planned.

<https://github.com/landley/toybox/releases/tag/0.8.8>

DEEPIN LINUX 23 PREVIEW

15/08/2022

Deepin is the top Linux distribution from China, devoted to providing a beautiful, easy-to-use, safe, and reliable operating system for global users. (Global Ranking)

Deepin V23 Preview is a staged version of deepin V23, which includes three main features: brand-new repositories, atomic updates, and a self-developed package format. Please note that it cannot be upgraded from deepin 20 directly at present.

Linglong is a new package format developed by deepin,

aiming at solving various compatibility problems caused by complex dependencies of traditional package formats under Linux, and reducing the security risks caused by decentralized control of permissions. It is available to any Linux distribution, supports incremental updates of applications, managing, distributing, and sandboxing apps, which not only improves ease of use, but also greatly protects user privacy.

<https://www.deepin.org/en/linux-system-distribution-deepin-23-preview-released/>

VALVE HAS RELEASED

PROTON 7.0-4:

16/08/2022

Valve has published the release of the Proton 7.0-4 project, which is based on the code base of the Wine project and is aimed at ensuring the launch of game applications created for Windows and presented in the Steam catalog. The project is distributed under the BSD license.

Proton allows you to directly run

in the Steam Linux client gaming applications supplied for Windows only. The package includes the implementation of DirectX 9/10/11 (based on the DXVK package) and DirectX 12 (based on vkd3d-proton), running through the broadcast of DirectX calls in the Vulkan API, provides improved support for game controllers and the ability to use the full-screen mode regardless of the screen resolutions supported in games. The esync"esync" (Eventfd Synchronization) and "futex/fsync" and "futex/fsync" mechanisms are supported to increase the performance of multithreaded games.

<https://github.com/ValveSoftware/Proton/releases/tag/proton-7.0-4>

RELEASE OF LIBREOFFICE

7.4:

18/08/2022

The Document Foundation has released the LibreOffice 7.4 office package. Ready-made installation packages are prepared for various Linux, Windows and macOS distributions. 147 developers participated in the

production, of which 95 are volunteers. 72% of the changes were made by the employees of the three companies that oversee the project - Collabora, Red Hat and Allotropia, and 28% of the changes were added by independent enthusiasts.

The release of LibreOffice 7.4 is equipped with the "Community" label, will be supported by enthusiasts and is not aimed at application at enterprises. LibreOffice Community is available for free for free to everyone, including corporate users. For enterprises in need of additional service, products of the LibreOffice Enterprise family are separately developing, for which partner companies will be provided with full support, the ability to receive long-term updates (LTS) and additional functions such as SLA (Service Level Agreements).

<https://blog.documentfoundation.org/blog/2022/08/18/libreoffice-7.4-community/>

RELEASE OF KDE GEAR

22.08:

19/08/2022

The August summary update of the applications (22.08) developed by the KDE project is presented. Recall that the summary set of KDE applications from April 2021 is published under the name KDE Gear, instead of KDE Apps and KDE Applications. In total, 233 programs, libraries and plugins have been published as part of the update. Information about the availability of Live-assemblies with new releases of applications can be obtained on this page, <https://community.kde.org/Plasma/LiveImages>

<https://kde.org/announcements/gear/22.08.0/>

JANET JACKSON RUINING

OLDER HARWARE:

19/08/2022

MITRE assigned the video with the song Janet Jackson "Rhythm Nation" the vulnerability identifier of CVE-2022-38392 due to the disruption of the normal

operation of some old laptops during its playback. This composition can lead to an emergency shutdown of the system due to failures in the hard disk associated with the reproduction of certain resonance frequencies.

It is noted that the frequency in the clip coincides with the fluctuations occurring in disks rotating at 5400 rpm, which leads to a sharp increase in the amplitude of their oscillations. Information about the problem was shared by a Microsoft employee, who told a story from the weekdays of the support service of Windows XP about: How to deal with the complaints of users of one of the major manufacturers who revealed that "Rhythm Nation" leads to disruptions of individual models of drives based on hard magnetic disks used in the laptops produced by this manufacturer.

The problem was solved by the manufacturer through the addition of a special filter to the sound system that does not allow unwanted frequencies during sound playback. But such a workaround did not provide full protection, for example, the case mentioned where the failure was

repeated not on the device on which the clip was played, but on a nearby laptop. The problem was also recorded on laptops from other manufacturers sold around 2005. Information about the effect has been disclosed since it has already lost its relevance and the problem does not manifest in modern hard drives.

<https://devblogs.microsoft.com/oldnewthing/20220816-00/?p=106994>

RELEASE OF KRITA 5.1:

20/08/2022

Krita 5.1.0, designed for artists and illustrators, is out. The editor supports multi-layer image processing, provides tools to work with different color models and has a large set of tools for digital painting, sketches and texture formation. Self-contained images in the AppImage format for Linux, experimental APK packages for ChromeOS and Android, as well as binary builds for macOS and Windows are available for installation. The project is written in C++ using the Qt library and distributed under the GPLv3

license.

<https://krita.org/en/item/krita-5-1-0-released/>

DESKTOP RELEASE BUDGIE

10.6.3:

22/08/2022

The organization 'Buddies of Budgie', which oversees the development of the project after its separation from the Solus distribution, introduced a release Budgie 10.6.3 desktop. Budgie 10.6.x continues to develop a classic code base based on GNOME technology and its own GNOME shell implementation. In the future, they expect to start the development of the Budgie 11, a branch in which they plan to separate the functionality of the desktop from the layer that provides visualization and output of information, which will allow you to abstract from specific graphic libraries, and implement full support for the Wayland protocol. The project code is distributed under the GPLv2 license.

<https://blog.buddiesofbudgie.org/budgie-10-6-3-released/>

RELEASE OF CELLULOID

0.24:

20/08/2022

Celluloid 0.24 (formerly GNOME MPV) video player, that provides a graphical interface based on the GTK library for the MPV console video player, is out. Celluloid is used in Linux Mint and Ubuntu MATE as a default video player.

<https://github.com/celluloid-player/celluloid/releases/tag/v0.24>

FULL CIRCLE WEEKLY NEWS

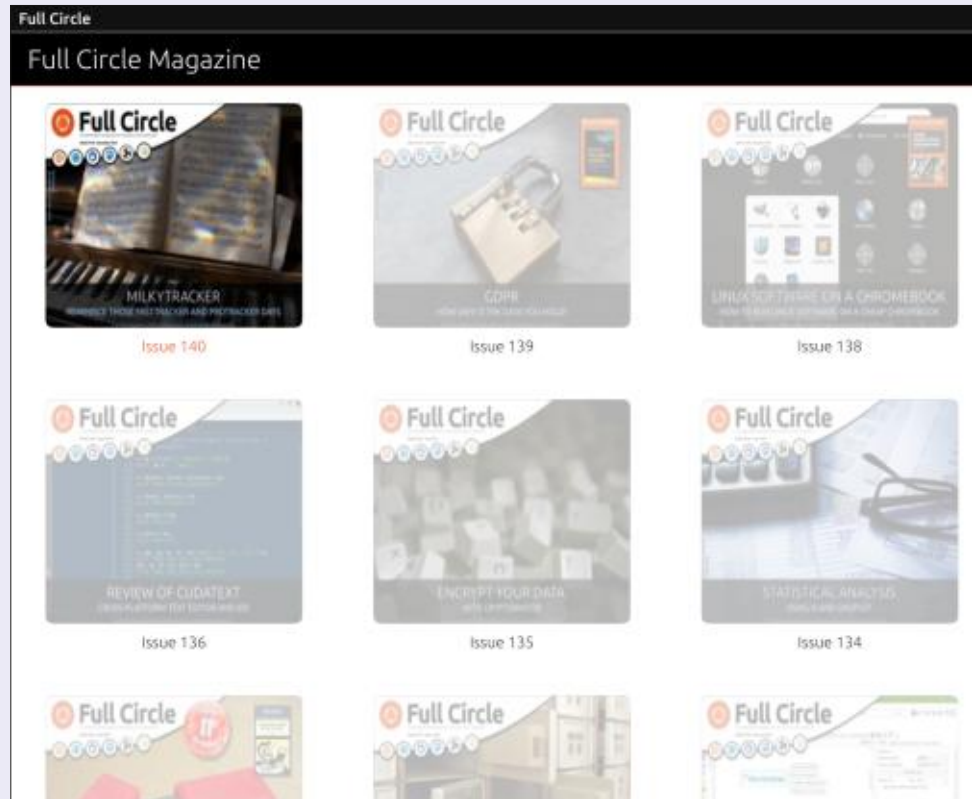


Join our host Moss Bliss as he presents you with a short podcast (<10min) with just the news. No chit-chat. No time wasting. Just the latest FOSS/Linux/Ubuntu news.

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



THE OFFICIAL FULL CIRCLE APP FOR UBUNTU TOUCH - UPDATED!



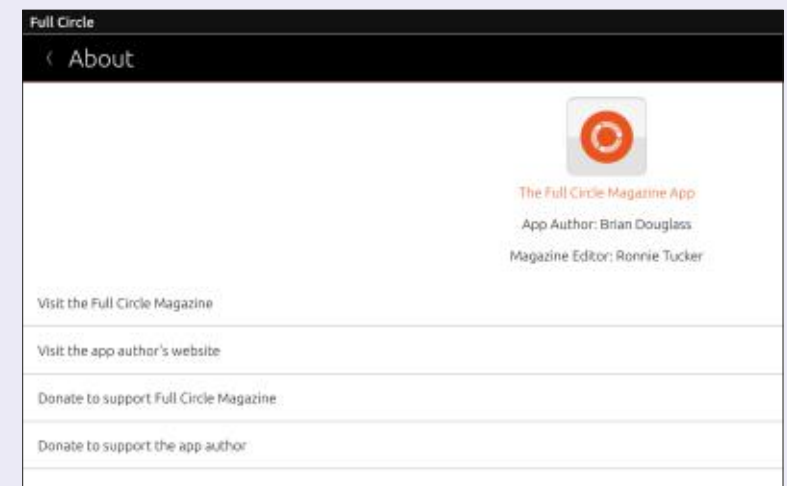
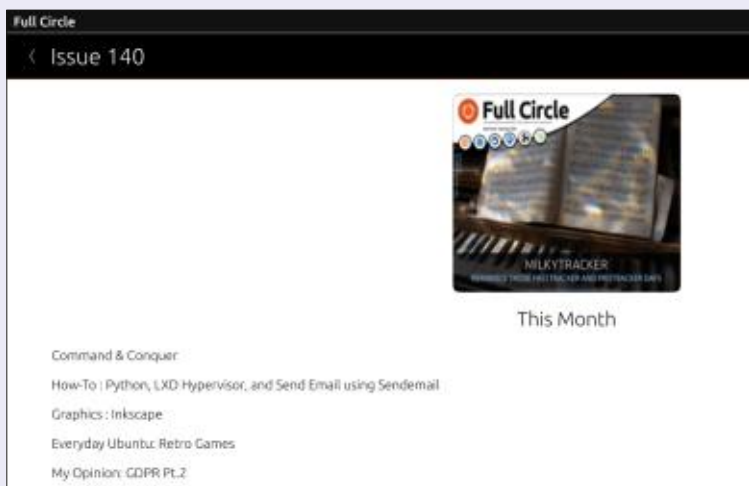
Brian Douglass has updated his FCM app for Ubports Touch devices that will allow you to view current issues, and back issues, and to download and view them on your Ubuntu Touch phone/tablet.

INSTALL

Either search for 'full circle' in the Open Store and click install, or view the URL below on your device and click install to be taken to the store page:

<https://uappexplorer.com/app/fullcircle.bhdouglass>

HUGE thanks to Brian for this.



THE

VIRTUALBOX NETWORKING PRIMER

Connecting and Configuring
Virtual Machines



Robin Catling

The VirtualBox Networking Primer

Connecting and Configuring Virtual Machines

The VirtualBox Networking Primer is a no-nonsense guide for the VirtualBox user taking their next steps into virtual networks.

While Oracle VM VirtualBox is a great free tool, the real power of virtualisation comes when you start connecting virtual machines to each other and to the wider world. Software development, sales, education and training are just some of the areas in which network access to virtual machines offers endless opportunities. But the world of computer networks is filled with complex technical jargon.

Complete with principles, practice, examples and glossary, The VirtualBox Networking Primer takes the frustration and confusion out of connecting real-world projects.

Author: **Robin Catling**

Publisher: Proactivity Press

ISBN13 : 9781916119482

Amazon US link:

[https://www.amazon.com/dp/1916119484?
ref=pe_3052080_397514860](https://www.amazon.com/dp/1916119484?ref=pe_3052080_397514860)

Amazon UK link:

[https://www.amazon.co.uk/VirtualBox-Networking-Primer-
Connecting-Configuring/dp/1916119484/ref=sr_1_1?
dchild=1&keywords=virtualbox+networking+primer&qid=16002536
99&s=books&sr=1-1](https://www.amazon.co.uk/VirtualBox-Networking-Primer-Connecting-Configuring/dp/1916119484/ref=sr_1_1?dchild=1&keywords=virtualbox+networking+primer&qid=1600253699&s=books&sr=1-1)

Kobo:

[https://www.kobo.com/us/en/ebook/the-virtualbox-networking-
primer](https://www.kobo.com/us/en/ebook/the-virtualbox-networking-primer)



COMMAND & CONQUER

Written by Erik

Welcome back to another issue of command and conquer. We talked about screen in a previous issue, where I mentioned tmux. This issue is where that happens.

INSTALLATION

They say a picture is worth a thousand words, let's see if this works.

Once you have installed it,

```

Terminal - ed@gifappel: ~
File Edit View Terminal Tabs Help
ed@gifappel:~$ sudo apt install tmux
tmux          tmuxp          tmux-themepack-jimeh
tmuxinator    tmux-plugin-manager
ed@gifappel:~$ sudo apt install tmux

```

launch it by typing "tmux" and you should see a bar appear across the bottom of the terminal (shown below).

Let's talk about the key combinations and switches here, as that is what tmux revolves around.

In the general category, I'd put 'making mistakes'. Yes, tmux is very helpful in correcting you, if you do. In fact, I'd recommend you make them. This really is the best way to

learn. Unlike programming, where almost everything is "Syntax error" and no help is provided. I'd suggest starting with the tmux command and following it with every letter in the alphabet. It may seem dumb, but this is how you learned as an infant. It is a LOT better than me just "telling" you. Don't worry, I will still be giving you a lot of information, but I want you to discover some for yourself.

Ain't tmux grand?

If you remember our article on screen, the key combination to tell screen that you were going to give it a command, was CTRL+a. (Let's call it a "primer"). In tmux, it is CTRL+b. The most important one I'd like to tell you about is the '?'. If

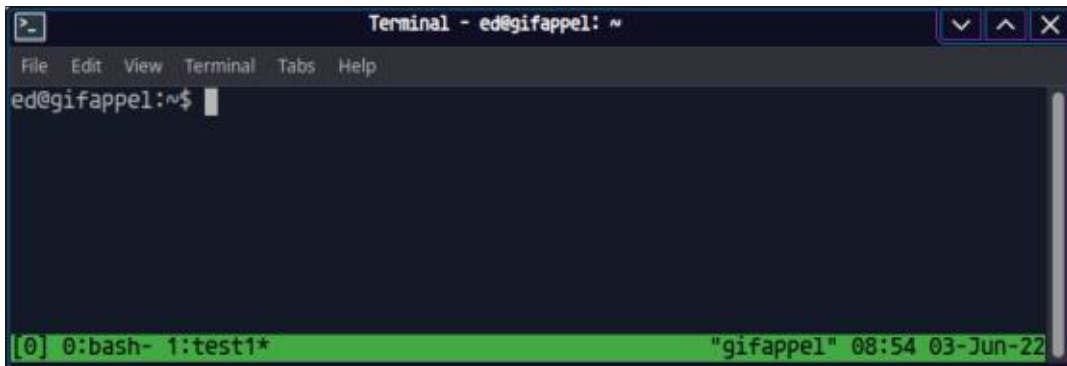
you press CTRL+b, and then a question mark, help will be displayed. The nice thing here is that you can use your mouse wheel to scroll up and down that list. Though all this may seem silly to GUI users, there will come a time you will have to surf the terminal and why not make it as comfortable as possible?

In tmux, you can have tabs or windows, allowing you to do one thing that may run a while, and open another "window" in the same terminal to do something else. You don't see another window per-se, but a "new" window within the current one. You can name these windows simply by using the CTRL+b to "prime" it, followed by a ',' (comma). Type the new name and

```

Terminal - ed@gifappel: ~
File Edit View Terminal Tabs Help
ed@gifappel:~$ tmux d
ambiguous command: d, could be: delete-buffer, detach-client, display-menu, display-message, display-popup, display-panes
ed@gifappel:~$

```

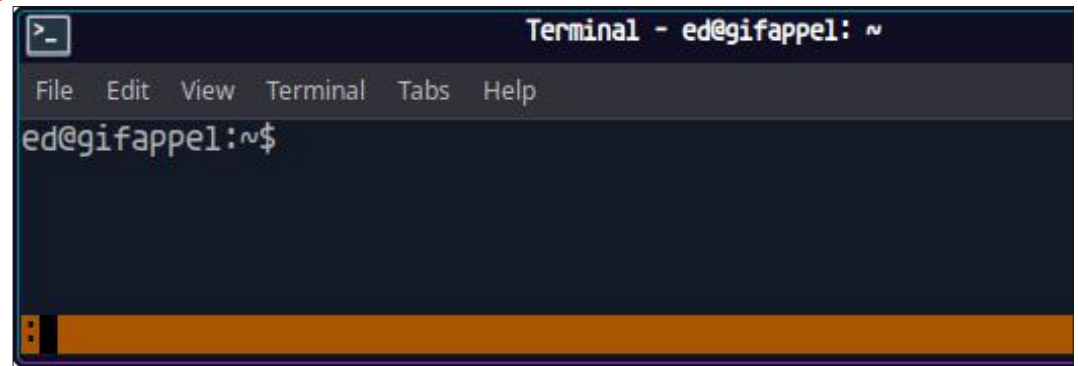
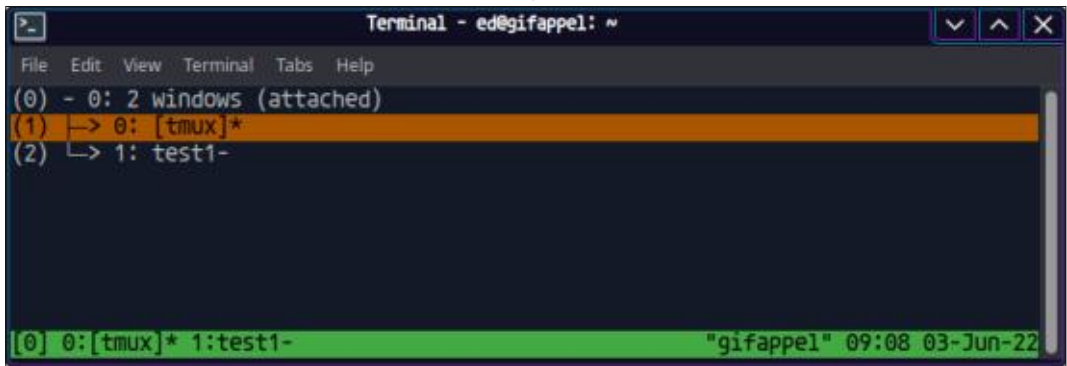


it will be displayed in the bottom instead of "bash" (see above).

This makes it easy to remember what you were doing in which window, if you have a lot of them open. As with screen, p and n will be the previous and next window if you enter them after the primer. If you would like to see all the "windows" that you have open, it is w after the "primer", and to go back to the "last" window you were on, it is l after the primer. When you use the "w" command, the windows are listed with numbers, you can go straight to any of those with the

number of that window directly after the primer keys. You can also find a window by the name you gave it, another reason to name your windows. Type your primer, followed by an f and then simply type part of the word to find your window. Obviously you will have to get specific if you named your windows something like "docker1" "docker2" and "docker3". Hint: don't.

Now you may want to kill a window and not the whole terminal. This is where you use the ampersand "&" (which will look

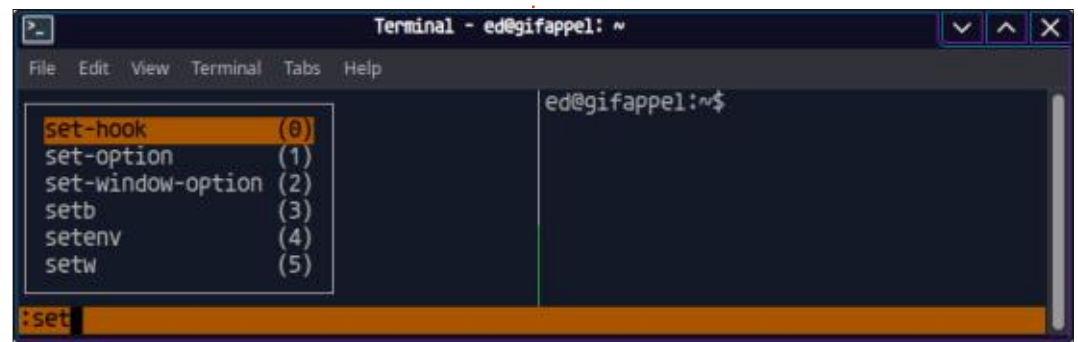


different depending on the font). Shift+7 on my keyboard. You should get a prompt to ask you if you'd like to kill it. If you would like to group windows, you can easily move them with the '.' period after the primer, though in all honesty, I have never used that functionality, ever. To have some fun with tmux, I like to use it after the primer. It gives me a clock (time) to see when I can go home. XD What can I say, being a prostitute is a hard life, I give my body to my boss for a minimum of 8 hours a day, and I don't wear a watch.

Now tmux is a lot more in-depth

than a simple 'command and conquer' could cover, but I'd like to cover more bases than hotkeys. Tmux also understands commands. For instance, you can type 'tmux ls' to list all of the open windows or sessions. Just like vi / vim, there is a "hidden" menu that appears after you press ":" (colon) after the primer (shown above).

This allows for even more functionality; for instance, typing the word "new" after that colon, will open a new window. Personally I find it easier to use the hotkeys, but to each his own. (Though you can do more this way).



My advice from earlier stands, type a letter and tab complete to see options here too. Here I typed “set” then tabbed to get results.

But that is not all, you can go a step further and set up a “dotfile” and load that up. When you get to the colon, simply start typing source and tab complete to load a source file:

```
source-file ~/.tmux.conf
```

(You can grab nice files from the internet, just be sure to read them first to understand what they do.) I will link you here:

<https://www.hamvocke.com/blog/a-guide-to-customizing-your-tmux-conf/>

<https://linuxhint.com/customize-tmux-configuration/>

Some helpful resources. Enjoy.

A lot of Vim jockeys enjoy tmux, because of the bindings you can create. I am honestly not a fan, but I will include a sprinkling here for those of you who are (not listed in those links):

```
bind s split-window -v  
splitting
```

```
bind v split-window -h  
splitting
```

```
bind h select-pane -L  
motion keys
```

```
bind j select-pane -D  
motion keys
```

```
bind k select-pane -U  
motion keys
```

```
bind l select-pane -R  
motion keys
```

```
setw -g mode-keys vi  
vim motion keys while in copy mode
```

```
bind - resize-pane -D 1  
resize pane down by 1
```

```
bind + resize-pane -U 1  
resize pane up by 1
```

```
bind < resize-pane -L 1  
resize pane to left by 1
```

```
bind > resize-pane -R 1  
resize pane to right by 1
```

Which brings me back to the “?”. If you would like to split a pane, say vertically, you can use the “%” after the primer. It is easy to look these up with the built-in help “?”. I will not rehash what you can find there. Please figure out yourself how to

use those hotkeys from that, hey it’s a learning experience. You may not use the terminal much just playing minecraft, but once you get into creating your own minecraft server, you may understand.

Did we make mistakes? Let us know misc@fullcirclemagazine.org



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



Greg's regular Python series will be back next month.

If you are anything like me, after a few years of exposure, the ability to write Bash scripts seemed to get automatically absorbed in my psyche by osmosis. I have also tinkered with Python but find Bash comes so easily to me that I've struggled to justify committing lots of time to learning it to the same level. Even though admittedly, there have been times when Lambda functions or Python dictionaries would have probably meant less effort overall, I still persevered with Bash.

Recently, I was pleasantly surprised to discover someone skilled had created a Bash script/Python script converter called "bash2py" (<https://www.swag.uwaterloo.ca/bash2py/index.html>).

And, following that piece of wizardry, another clever person wrapped bash2py up into a Docker

image for ease of use (<https://zwischenzugs.com/2016/08/29/bash-to-python-converter>).

Keen to see if it worked, I thought I would try bash2py with a simple script – as we'll see in a moment. At this stage, it's definitely worth pointing out that you will get mixed results with tools like this one. The author of bash2py states that it is intended to only "do the lion share of the translation effort". And, additionally, if your Bash script contains errors, surprisingly so will the resulting Python script! You have been warned.

That said, for relatively simple jobs, like a Lambda function in AWS for example, this tool should be able to give you the building blocks in Python that could be further developed upon.

SIMPLE BASH SCRIPT

Here's a simple script I wrote in order to test out the converter. Its purpose is to employ the very latest technological advances, and... as

```
#!/bin/bash
echo -e "\nI am a Bash script and I can count...\n"
for counter in {1..5};
do
    echo ${counter}
done
exit
```

quickly as possible, it counts to five. The Bash script is shown above.

I have saved the Bash script as a file called "bash.sh". We'll save it again in a moment, so stay tuned. To test it works, I ran these commands:

```
chmod +x bash.sh
./bash.sh
```

```
I am a Bash script and I can
count...
```

- 1
- 2
- 3
- 4
- 5

I can see the script, counting to five, so we're all set.

RESULTING PYTHON SCRIPT

Now that we have a simple Bash

script, let's see what bash2py makes of it. We will use the Docker image approach. With Docker already installed, the command to use is this:

```
docker pull imiell/bash2py
```

Next we can check how big that image is, with this command:

```
docker images
```

REPOSITORY	TAG
IMAGE ID	CREATED
SIZE	
imiell/bash2py	latest
09dfc6f8a82e	5 years ago
494MB	

As we can see around half a GB of space is taken up by the Docker image.

Let's see bash2py in action by entering the container after asking Docker to run it:

```
docker run -ti imiell/bash2py
```

```
root@8c3fa65fce45:/opt/  
bash2py-3.5#
```

As we can see from the command prompt, we're inside the container and can execute commands relating to bash2py. Next, we're going to use the "vi" text editor inside the container and paste the "bash.sh" script into a file of the same name on the container's filesystem, with this command:

```
root@8c3fa65fce45:/opt/  
bash2py-3.5# vi bash.sh
```

Save that file inside the container by exiting "vi".

Now, run it too, if you like, with this command (after first making it executable again):

```
root@8c3fa65fce45:/opt/  
bash2py-3.5# chmod +x bash.sh
```

```
root@8c3fa65fce45:/opt/  
bash2py-3.5# ./bash.sh
```

Great, the output is the same as before. We can count to five yet again.

Let's finally test bash2py with

this command:

```
root@8c3fa65fce45:/opt/  
bash2py-3.5# ./bash2py  
bash.sh
```

The command completes without any output. If you do an "ls" command, you will see that a new file has been created inside the container's directory called "bash.sh.py", as so:

```
ls
```

```
MANIFEST README.txt  
analyzers bash-4.3.30  
bash.sh bash.sh.py bash2py  
bash2py.py bin install  
source_code.txt tests
```

If we use Python inside the container first, and execute that Python script, we should be able to see if it runs, as shown with this command:

```
root@8c3fa65fce45:/opt/  
bash2py-3.5# python  
bash.sh.py
```

```
I am a Bash script and I can  
count...
```

```
1  
2  
3  
4  
5
```

```
root@8c3fa65fce45:/opt/  
bash2py-3.5#
```

```
#!/usr/bin/env python  
from __future__ import print_function  
class Bash2Py(object):  
    __slots__ = ["val"]  
    def __init__(self, value=''):  
        self.val = value
```

```
def GetVariable(name, local=locals()):  
    if name in local:  
        return local[name]  
    if name in globals():  
        return globals()[name]  
    return None
```

```
def Make(name, local=locals()):  
    ret = GetVariable(name, local)  
    if ret is None:  
        ret = Bash2Py(0)  
        globals()[name] = ret  
    return ret
```

```
print("\nI am a Bash script and I can count...\n")  
for Make("counter").val in [1,2,3,4,5]:  
    print(counter.val)  
exit()
```

Excellent! We have a working Python script!

What has bash2py changed in our script? In the listing shown above, you can see the contents of our generated Python script.

If you look at Listing Two, most of the work has been done setting up the script so it will run in the environment. At the end of the script, we can see a "for" loop, which is very Bash-like.

The last thing to do is to copy the script outside the container and run it on my laptop, just to be sure.

A reminder that when you type "CTRL-D" inside the container to exit the shell, your container will stop and destroy the data inside it, because of the Docker command we used earlier.

With the Python script copied into my clipboard, I create a new script called "counter.py" and, knowing that my laptop is using Python version 3, then use this

command to execute it.

```
Delta ~ # python3 counter.py
```

```
I am a Bash script and I can  
count...
```

```
1  
2  
3  
4  
5
```

As hoped, our simple script runs on my laptop too! Great news.

THE END

Obviously you still need some knowledge about Python if you use tools like this.

But bash2py could save you some eyestrain and lots of time under certain circumstances. Be warned you may find, especially for more complex operations, that a fair amount of tweaking is required.

Hopefully, a quick look at this very clever tool has inspired you to try it out for yourself. You never know, it might save the day at some point in the future.



Chris Binnie's latest book, called *Cloud Native Security*, details DevSecOps tooling, security threats in containers and Kubernetes and Cloud Security Posture Management. Further information can be found here: <https://cloudnativesecurity.cc>



NOTE: Parts 1-6 are FCM#105-110

In the early days of computers, a company called Digital Equipment Corporation (DEC) created its 32-bit VAX computer using OpenVMS as its operating system. Because a VAX/VMS computer is so reliable, there are today - after more than 25 years - still a large number of them in use. But, in the end, even these reliable computers will have to be replaced. As described in part 1 (FCM#105), you could migrate from VAX/VMS to Linux, as the way Linux works is largely compatible with OpenVMS. If you use Pascal as your programming language, you will find that Lazarus/Free Pascal is a good replacement. But there are technical functions used in OpenVMS with no apparent replacement in Linux. In this article, I will update you with improvements and experience since my last article.

EARLY RETIREMENT?

In the conclusion of part 6, I told you that I was going into early

retirement. That was a big mistake. Two years later I was approached for a position in Vienna where they had a few 20 year old Alpha's and now I am working there for three years already. And if I listen to the customer, I get the idea that I will be working there long after my retirement.

FILE VERSION NUMBERS

In part 4 of my article, I told you that "If your project is depending on this behavior (the file version, not the crashing), you will have to change your programs. Either by adding a version number to the name or type, or by changing your project in such a way it will no longer depend on the file versions." My very first potential customer (my current job) was heavily relying on these file version numbers. One job is being started many times with different parameters, so many log files are being created with the same name. So I changed my file handling routines to use version numbers. As Linux does not have an equivalent, I solved it by adding (and expecting) the file version

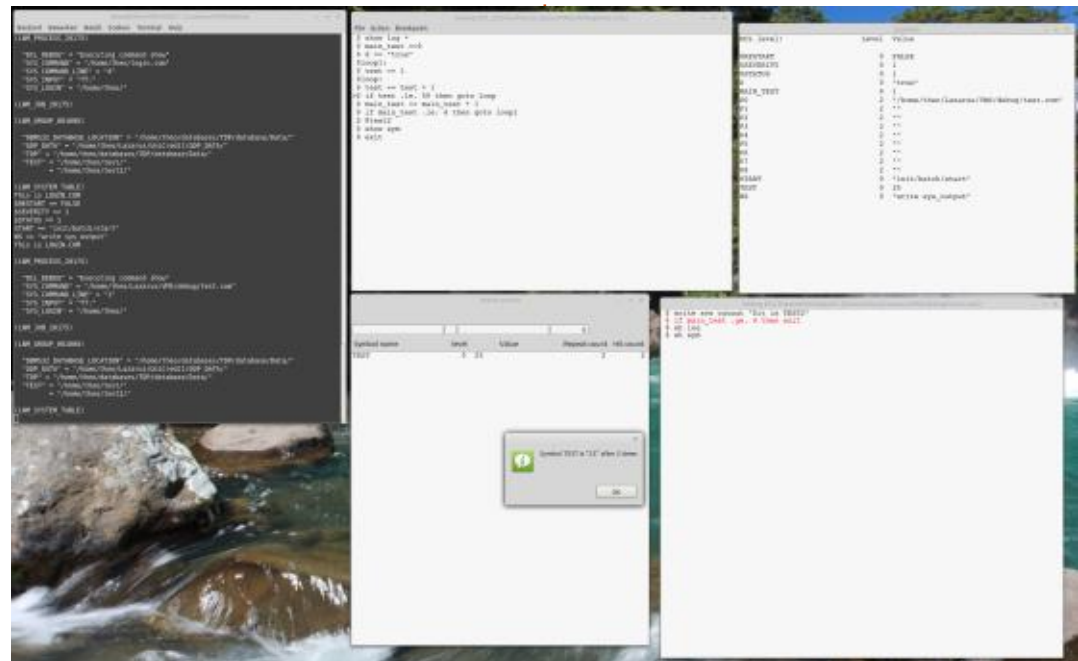
number as a part of the filename in the format ";1234". As this is a string, and not a 16-bit number, the restriction of the maximum of 32767 is lifted. That might cause problems in a project that relies on that maximum, but that's something for the future.

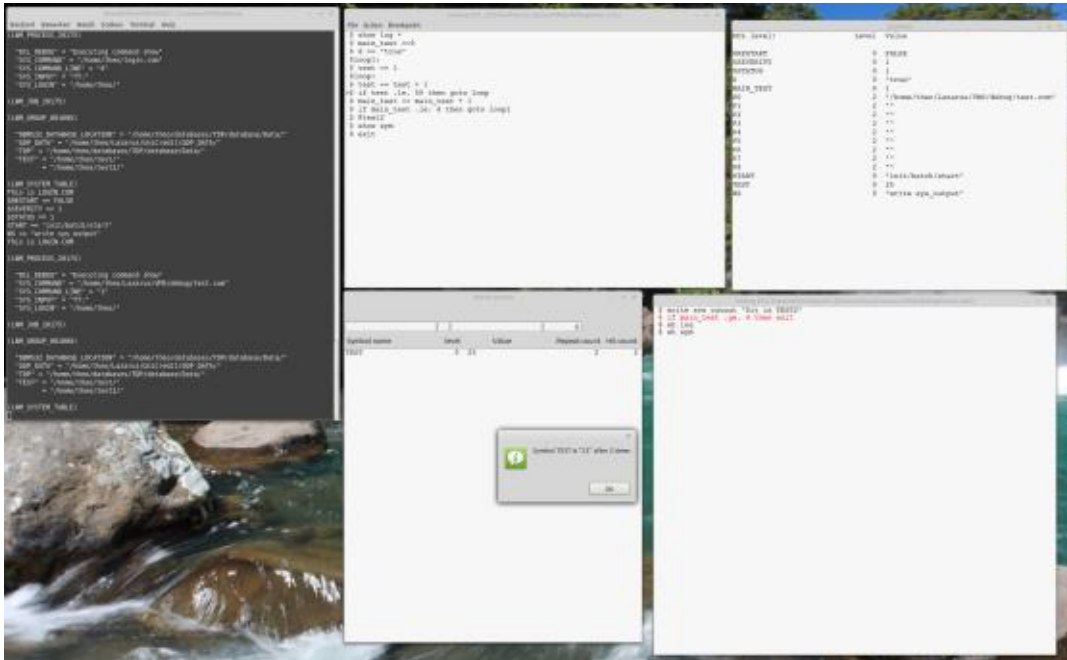
Another issue with log files of batch jobs is that if you ask the system what the log file of job xxxx is, you will get the filename and location only. You have to use tricks like writing a token in the current log file and search through all

versions for that token to find the file version number. This made me change my implementation of the batch by including the file version number as soon as the job starts.

GRAPHICAL DCL DEBUGGER

When trying my first real migration, I ran into difficulties. Not knowing if my implementation of DCL is wrong (yes, I found a bunch of bugs), I needed a way to see what's going on while a script is being executed. The normal way to





debug a DCL script is to put in some write or show commands. But this is very tedious and you have to put the commands in at exactly the right points, which you do not know upfront. If only you could debug a DCL script the same way you would debug a program.

I have created exactly that. A graphical application with breakpoints, watchpoints, and a continuous display of symbols, local and global. You can specify a break on exit, to determine which exit point a routine takes (including error exit). So you have the opportunity to see what the value of the local symbols are on exit (or

the cause of the error). I wished I had this application years ago.

CODASYL DATABASE EXTENSIONS

In part 6 I told you about a different kind of database: a network database called DBMS32. In fact I should have called it a Codasyl database. This kind of database has been around longer than relational databases, and even had a normalization committee. My implementation is loosely based on the formalized specification. When my customer was facing the problem that a chain of jobs took



HOWTO - MIGRATION FROM VAX/VMS TO LINUX

way too long (6 – 7 hours), I started a feasibility study to see if I could do it better using my Codasyl database instead of Oracle. And of course I ran into the limitations of a Codasyl database. As it is designed for speed, it is not suitable for large sets of data.

But I didn't give up and tweaked my implementation to handle millions of records and introduced indices to keep the speed. Oracle uses special tables for indices that need to be updated. Those tables can get fragmented, so it helps to do a rebuild once in a while. But that can take more than an hour, and the tables that use these indices are blocked during that time (a problem that is very current at my customer). In my implementation, the build is so fast (less than a second) that I decided to do it on-the-fly instead of stored.

The end result was a processing time of less than half an hour, so more than 10 times faster.

I was also telling you about a graphical application to replace DBQ, the database interface program. I have extended this application with a graphical representation of the interlinked data, with the possibility of moving records (with your mouse) within a list to change the order.

CONCLUSION

As you can see, I haven't been inactive in the last 5 years. My new job is challenging, time consuming (up to 10 hours a day plus on the weekends), and is challenging all of my competences, but can also be boring from time to time. So if you have a new challenge for me, like speeding up your application by

using my implementation of a Codasyl database, you can always send me an email or contact me through LinkedIn.





```
\begin{figure}[h] %Use [b] to move to bottom of page
  \centering
  \includegraphics[height=3cm,width=3cm]{atom}
  \caption{Model atom}
  \label{fig:atom}
\end{figure}
\section{Heading} See figure \ref{fig:atom}
```

Above is the code Erik used in Part 3 of this series, using Latex to produce documents:

The following are required to make a complete document with an image:

```
\documentclass[letterpaper]{book}
```

```
\usepackage{graphicx}
```

These two packages are also useful:

```
\usepackage{subcaption} % Builds customized captions for images, tables, etc.
```

```
\usepackage{lipsum} %To add lipsum dummy text
```

All three of these packages should be available in any standard installation of Latex. The `\begin{document}` code has to be

closed in order to compile without error. Putting all the pieces together yields the code shown top right.

Some of this code should be self-explanatory. Other parts need some words to make their effects clear. The obvious ones are explained first.

Image files are imported size-as or to fit the text-width or line-width of the selected location. Height and width arguments in the `\includegraphics` instruction should be obvious. Latex is not limited to metric measures. Text-width and line-width are usually the same value, the width between left and right margins. If there is more than one column of text, then line-width will equal the column width. Images used inside a column will not by default exceed the column margins.

```
\documentclass[letterpaper]{book}
\usepackage{graphicx}
\usepackage{subcaption}
\usepackage{lipsum}
\begin{document}
\begin{figure}[h] %Use [b] to move to bottom of page
  \centering
  \includegraphics[height=3cm,width=3cm]{atom}
  \caption{Model atom}
  \label{fig:atom}
\end{figure}
\section*{Heading}
See figure \ref{fig:atom}
\end{document}
```

The centering instruction should also be obvious. Any element inside the figure environment will be centred between the left and right margins. The caption instruction gives text to the caption. Notice the caption is automatically given the name "Fig.", and the next number in the sequence of figures. Fig is short for figure, the number (visible in the pdf output) will change if other figures come before this one.

There is a label instruction in the code which is not required. Labels are very useful for providing cross references. They can be used to generate hot links in the pdf file, very useful for both author and reader.

The instruction `\includegraphics[height=3cm,width=3cm]{atom}` contains the name of the required graphic: `atom.png`. No file extension (file type) is required, Latex will import and show image files of types EPS, JPEG, PDF or PNG. If there are two or more files with the same name but different file types, the first file alphabetically is loaded in the document. The writer can indicate the correct file type in the `\includegraphics` instruction:

```
\includegraphics{sample-image.pdf}
```

Latex also assumes image files are stored in the same folder /

HOWTO - LATEX

directory as the tex document. It is possible to store graphics files in another directory. The location of the graphics file must be indicated in the includegraphics instruction. Either absolute or relative paths may be used. For example:

```
\includegraphics{./sample-image.png}
```

Image files may also be scaled, reduced or enlarged by a specific metric:

```
\includegraphics[scale=.5]{sample-image.png} % scales both width and height by 0.5
```

Images can be rotated:

```
\includegraphics[angle=10]{sample-image.png} % rotates the image by 10 degrees counterclockwise
```

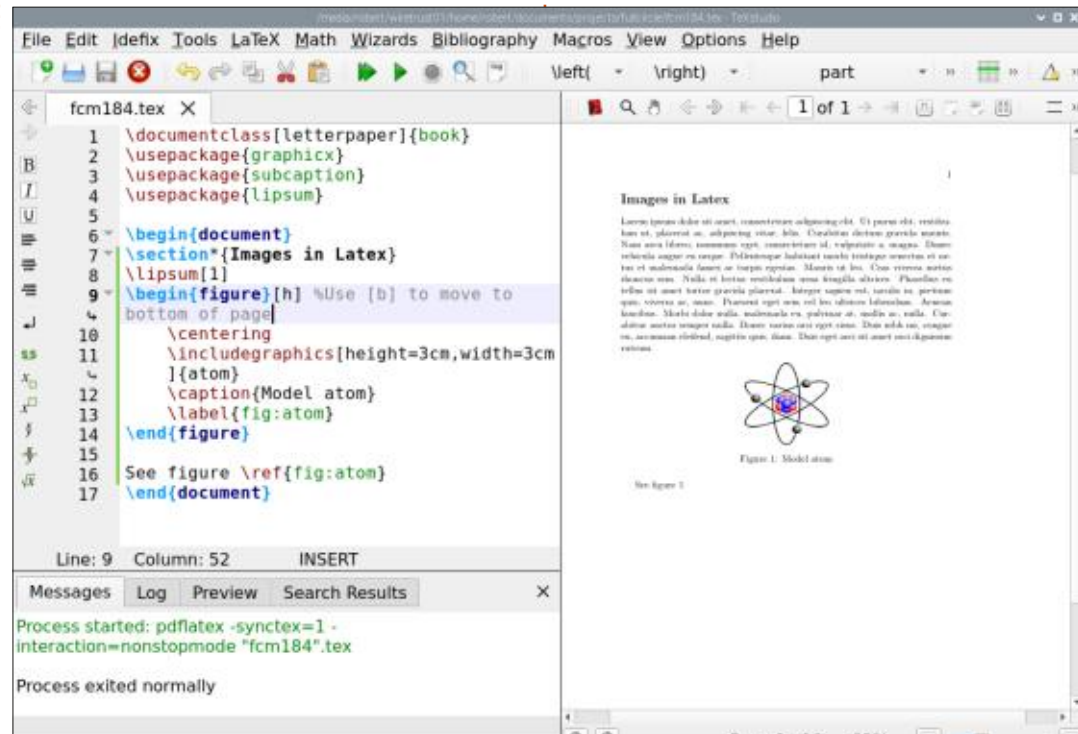
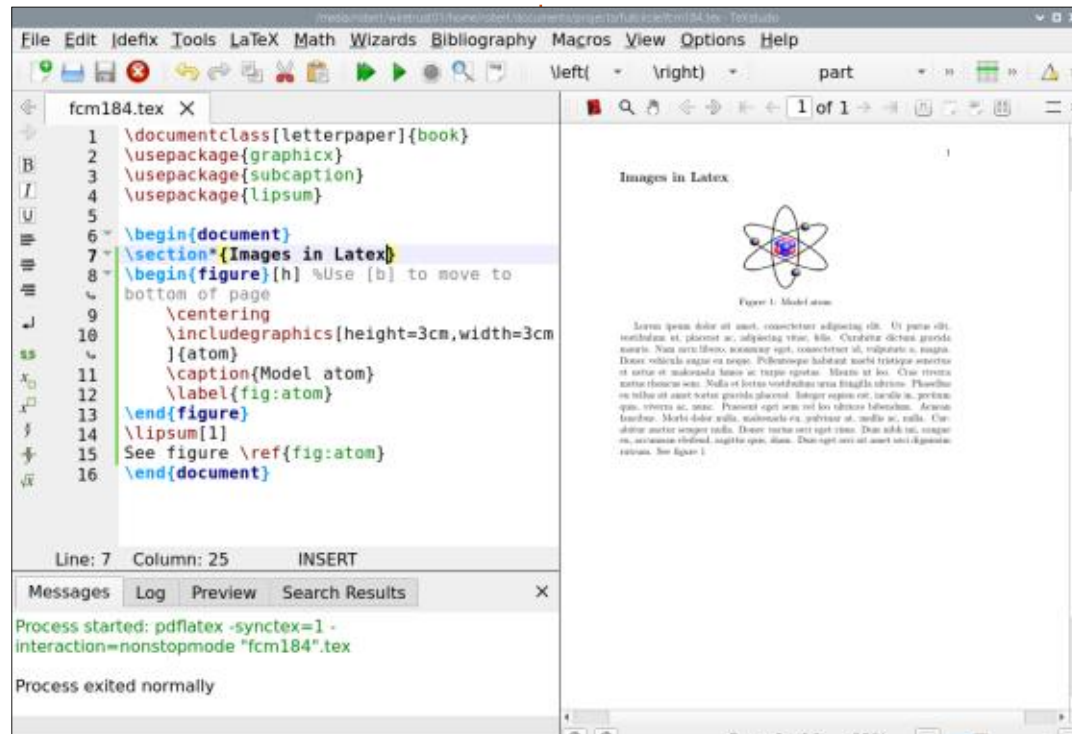
Location on the page is obviously important to the page design. The image environment floats images to the best location. If there is not room for the image on the selected page then it is moved to the next page, generating a new page if necessary. This action can be controlled through options in the beginfigure instruction. In it, you will see [h]

which indicates the graphic image should be inserted "here", at the location where the instruction is typed. Options are h=here, t=top of this page, b=bottom of this page, p=a separate page dedicated to floated elements, a different page in other words. If "t" or "b" are used, and the image is larger than the available space on the current page, the image will be moved to either the top or bottom of the next page. Repositioning the begin{figure} code using "h" as its first argument will move the image of the model of an atom within the document. (See images below left

and below right.)

I leave it to you to experiment with the position of text in relation to the position of the code for the image. Note: using lipsum to generate imitation text does not allow for inserting the image between paragraphs.

One way to control the position of an image is to resize it so it fits where you want it. Setting both height and width options to fixed values can distort images because it can change the aspect-ratio. Images can look squashed or stretched if



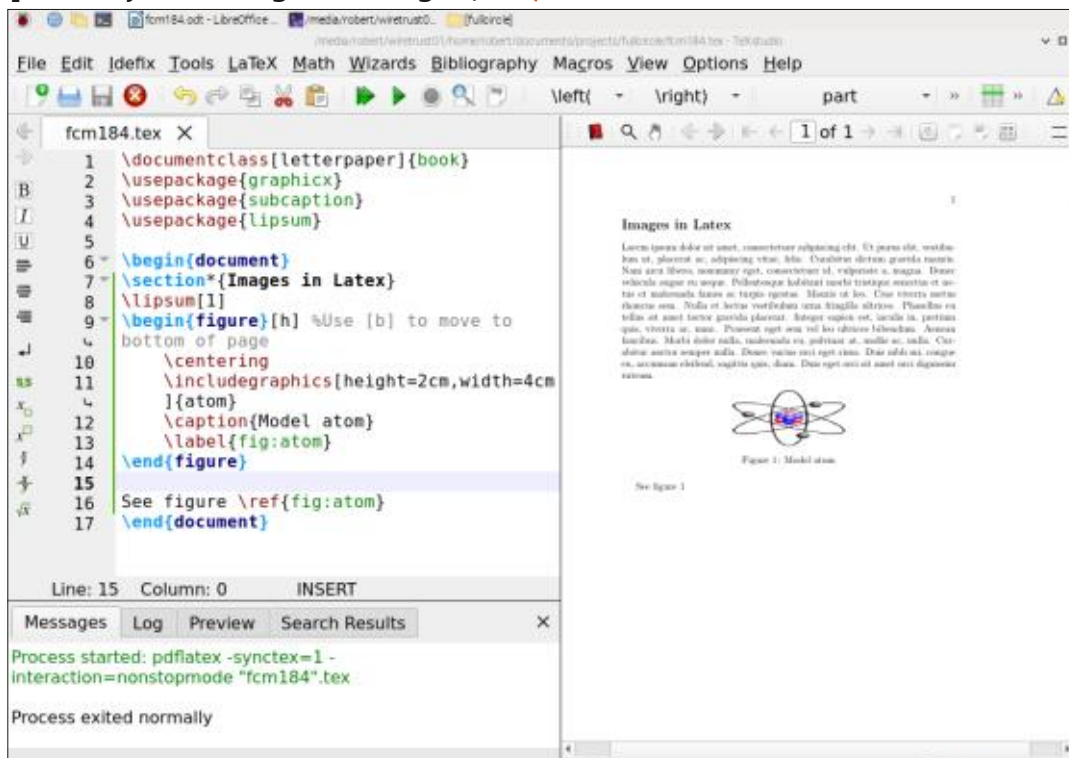
HOWTO - LATEX

both height and width are fixed values. (See image bottom left in which both height and width are fixed.) If only one of height and width is fixed, Latex will alter the other dimension automatically to maintain the aspect-ratio of the image.

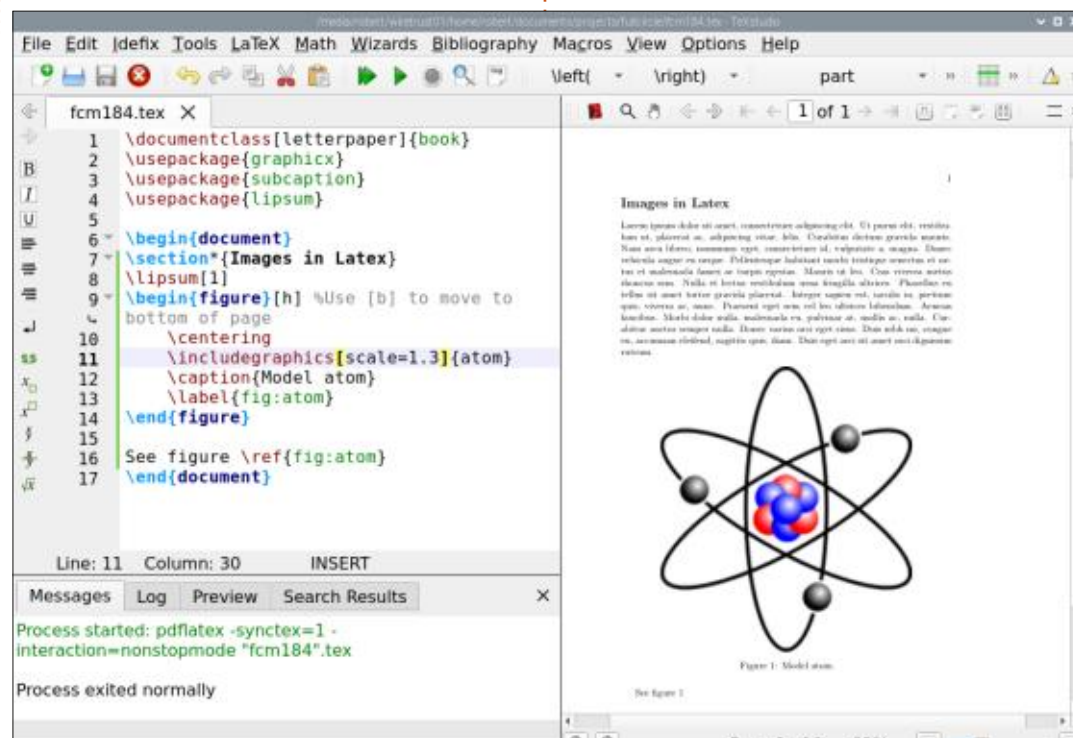
A similar way to resize an image is to use the `[scale]` instruction which alters both height and width by the same multiplier. This keeps the aspect ratio the same as the original. If `[scale=1]` the image is displayed in its original size, if `[scale>1]` then image is enlarged,

and if `[scale<1]` then image is reduced. (See image bottom right in which `[scale=1.3]`.)

I hope this article has given you a few ideas about working with images in Tex / Latex. Next time, I will discuss setting up columns, a necessary skill for many online and printed publications.



The screenshot shows a LaTeX editor window with the file `fcm184.tex`. The code includes `\documentclass[letterpaper]{book}`, `\usepackage{graphicx}`, `\usepackage{subcaption}`, and `\usepackage{lipsum}`. The document content includes `\begin{document}`, `\section*{Images in Latex}`, `\lipsum[1]`, and `\begin{figure}[h]` block. Inside the figure block, the image is included with `\includegraphics[height=2cm,width=4cm]{atom}`. The preview window shows a small atom image with the caption "Figure 1: Model atom". The status bar at the bottom indicates "Line: 15 Column: 0 INSERT".



The screenshot shows the same LaTeX editor window with the file `fcm184.tex`. The code is identical to the previous screenshot, but the `\includegraphics` command is changed to `\includegraphics[scale=1.3]{atom}`. The preview window shows a larger atom image with the caption "Figure 1: Model atom". The status bar at the bottom indicates "Line: 11 Column: 30 INSERT".



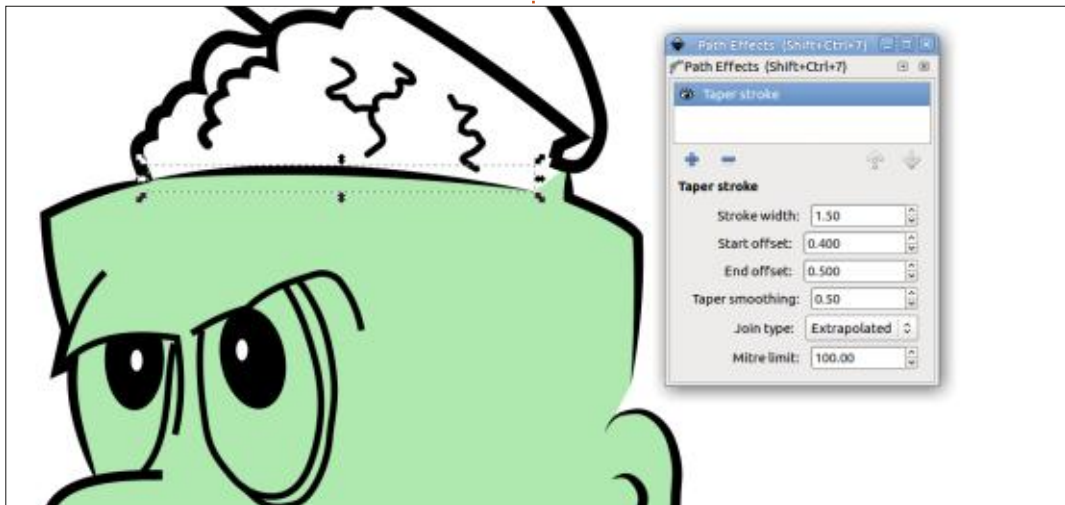
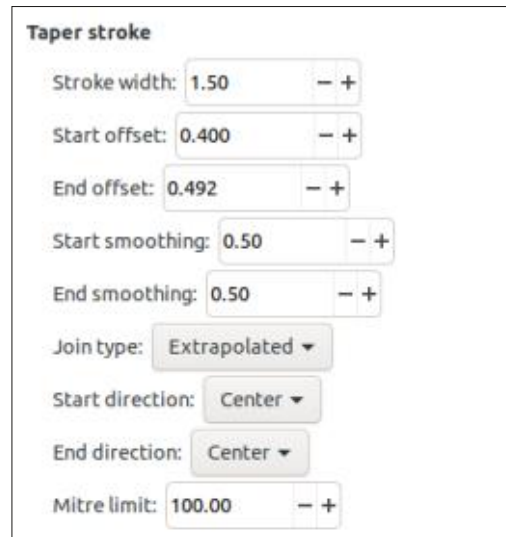
HOW-TO

Written by Mark Crutch

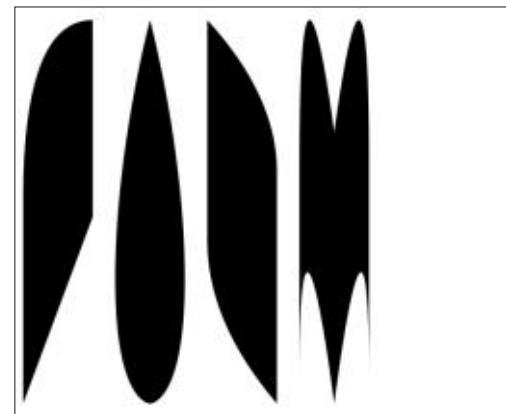
Inkscape - Part 124

I first described the Taper Stroke LPE in part 67 of this series (FCM#127). Back then, it was in the context of manually tracing an image. As an example, I took the 'Frankie' cartoon character, originally drawn by Vincent Mealing for our "Monsters, Inked" comic series, and traced over a scan of the original artwork using a variety of techniques. The Taper Stroke effect was used as a quick-and-easy way to produce more interesting outlines, without going to the full extent of using the Power Stroke LPE. Here's a screenshot that appeared in the article, showing the result of using the effect in the drawing, and the UI for the LPE as it was at that time.

With Inkscape version 1.1, several new additions were made to the Taper Stroke parameters – enough to warrant a quick update in this series. Here's how the UI appears now:



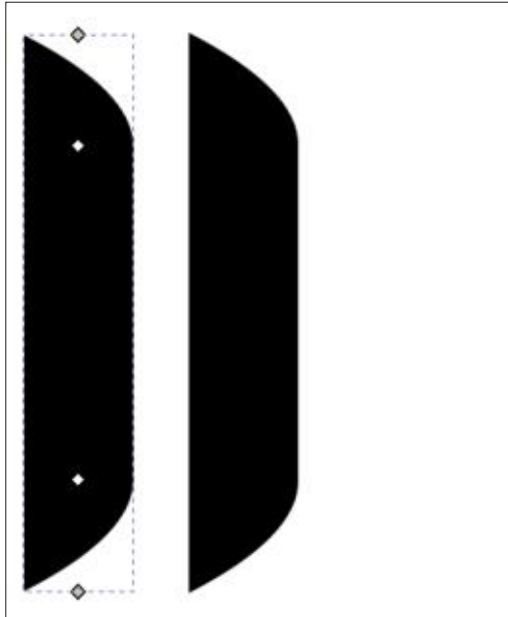
The first change is that the Taper Smoothing control has now been split into two parameters, governing the start and end smoothing respectively. In this context, smoothing refers to the shape of the taper, from a very rounded taper (smoothing: 1.0) to a straight line (smoothing: 0). You can see both of these used on the image below, which shows some of the effects that can be produced with this LPE when used on exaggeratedly thick lines. The Left-hand line displays the sensible limits of the smoothing parameter (1.0 at the top, and 0 at the bottom), while the rightmost line shows the effect of setting these to more extreme values (+/- 10.0 in this case).



This image also shows the other addition to this LPE: the ability to alter the direction of the taper. The second and fourth lines use the default "center" direction, but the first and third have their start and end directions variously set to "left" and "right". These are the only three options available – it's not possible to have a taper that terminates only slightly left of center, for example.

It's worth noting that the "left" and "right" designations are relative to the direction of the path. Imagine walking along the path from start to finish to determine which side of it is which. In the image below, the left-hand line has its directions set to "left", and the right-hand line has its directions set to "right", yet they both appear the same. The difference is that the former was drawn from bottom to top, and the latter from top to bottom. This also means that using Path Reverse on a shape with this LPE applied will flip the visible directions of the tapers, so watch out for that one if

you're forced to reverse the path for other reasons!



I've left the leftmost line selected in order to show the handles that are visible when the Node tool (F2) is active. As has always been the case, you can drag these handles to adjust the length of the start and end tapers. A new addition, however, is that you can now shift-click on them to cycle between the three direction values, making it quick and easy to experiment with this upgraded capability.

With that, we've reached the end of the new Live Path Effects added in Inkscape 1.0 and 1.1 (I'm

skipping the experimental LPEs for the reasons mentioned last time). But these releases also brought with them some new extensions, which I'll describe below, and next month. These can all be found under the Extensions menu, of course, and I've included the relevant submenu at the start of each section title.

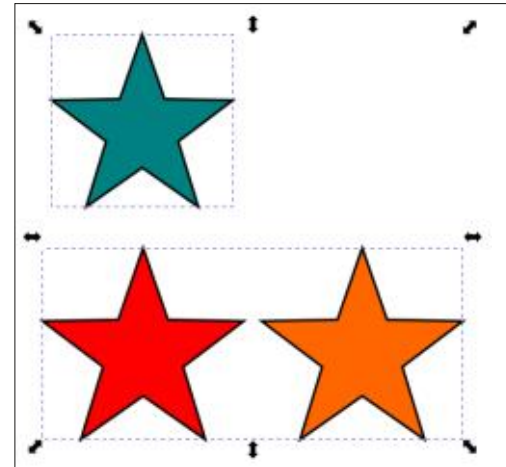
RENDER > FRAME

Let's start with a simple extension. This one draws a "frame" around each selected object in your image. I've put the word "frame" in quotes because it suggests something far more impressive than the result this extension produces. You might imagine an ornate picture frame, a Celtic knot style border, or perhaps something sweeping and calligraphic. Instead, what you actually get is what appears to be a rounded rectangle around each selected object. Except it's not even a rounded rectangle – it's a path – so there's no easy way to change the corner radius after the fact.

Drawing a rectangle that exactly hugs the outside of an arbitrary object is a little tricky in Inkscape.

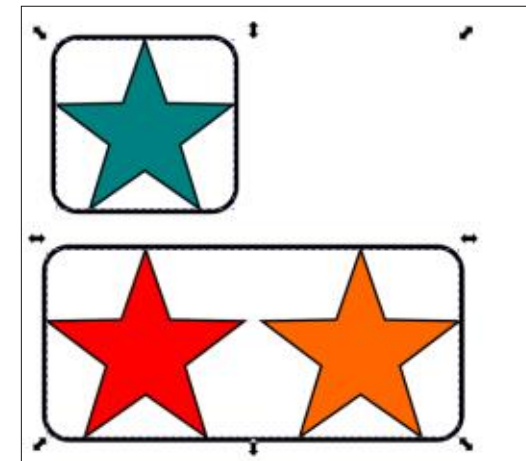
But it's not exactly rocket science either. The simplest approach I know of is to duplicate your object, select Object > Objects To Guides, then draw a rectangle by snapping to the intersections between the guidelines. This extension reduces those few steps down to one, but doesn't really offer many other advantages as it does so.

Let's look at it in action. We'll begin by selecting multiple items on the canvas. In this case there are two selections – one single star at the top, and one group of two stars at the bottom.

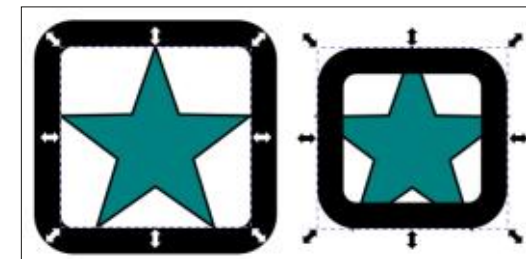


Now we'll run the extension with some pretty standard values to get started: Position is set to Outside, the checkboxes are left un-ticked, the stroke width is set to 2px and the corner radius to 10.

Finally the stroke color is set to black, and the fill (on the second tab) is transparent (alpha = 0). Here's the result:



The Inside/Outside popup can be used to determine whether the frame is drawn inside the bounding box of the selected object, or outside it. The difference is most obvious when the stroke thickness is cranked up a little – to 10px in this example.



The Clip checkbox determines whether or not the selected item should be clipped to the size of the

frame. Often this will make little difference, but if your object has a thick border, for example, this can theoretically hide the portion that extends outside the frame. I say “theoretically” because I have not been able to get this feature to work reliably at all. Most of the time enabling the Clip option just results in the entire object being removed. I have seen it work correctly on one occasion, but I haven’t been able to reproduce that behaviour since.

The Group checkbox, on the other hand, does seem to work. But all it does is group the selected object with its corresponding frame, saving you a small manual step if you need to keep the object and its frame together in this way.

The new frame is rendered on top of the selected object. Bear that in mind before setting the Fill tab to use an opaque color, as it will obscure the original element. You can change the stacking order after applying the extension, of course, but it’s another step to be aware of.

I don’t really see the point in this extension. It would make some sense if there was a field in which to add a padding value, allowing for

frames that don’t hug the content quite so tightly. If the frame could be rendered in the background as well, this would provide an easy way to add a box and background color for multiple items, turning them into buttons or icons, for example. As it stands, I see little benefit of using this extension over learning the small number of steps to perform this task manually, unless you have a very large number of objects that require tightly fitting rectangles around them for some reason. Ironically the next extension would have been a perfect example of a use for this feature, if it wasn’t for the fact that the output of the Frame extension is not at all in the right form for Export Layer Slices to use...

EXPORT ► EXPORT LAYER SLICES

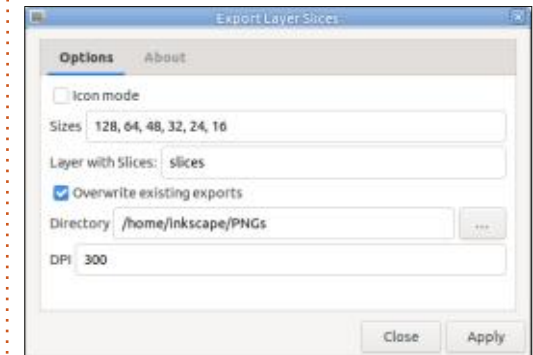
Inkscape already has a native mechanism for exporting multiple items in a document as separate PNG files, via the Batch Export feature in the File ► Export PNG Image... dialog. This assumes that the items you want to export are individual elements, or are already grouped in the right way. You can

get around this limitation by simply creating a layer on which to draw some rectangles (or other shapes) that mark out the sections of the page to export, then perform a Batch Export with those rectangles selected. Here’s a tip: if you don’t want the rectangles themselves to appear as part of the exported files, select them all and then hide the layer before you hit the Export button in the dialog – the Batch Export checkbox should still say “Batch export N selected objects”, where N is the number of shapes you selected in your slicing layer, but you’re not left with a visible stroke around the edge of each PNG.

The Export Layer Slices extension essentially does the same thing. To use it you have to create a slicing layer, then draw rectangles to mark the areas to be cut out and saved as separate PNGs. The layer has to be at the top level (rather than being a sub-layer), and the rectangles must actually be rectangles (i.e. <rect> elements in the XML), not paths or any other shape. The Export dialog approach doesn’t have either of these limitations.

When creating your slicing layer,

you need to ensure that the name of the layer is the same as the name used in the extension’s UI. By default, this is “slices”, so the easiest approach is simply to give your layer the same name.



Set your export directory, and the DPI for the images, and hit the Apply button to create your PNG files. If you want fine control over the filenames, you can first change the ID of each rectangle via the Object ► Object Properties dialog (don’t forget to hit the “Set” button). And you probably also want to tick the “Overwrite existing exports” checkbox, otherwise the extension will refuse to replace any existing files with the same names.

Unfortunately, this extension suffers from a major flaw, as far as I am concerned. Given that you have to create a whole separate layer to define the slicing regions, I would

HOWTO - INKSCAPE

expect that layer to be omitted from the exported images. After all, it exists only to provide some dimensions, it's not actually part of the drawing itself. But no, every exported image includes the rectangle's stroke and fill as part of the PNG. The easy workaround is to hide the layer before running the extension; unlike the equivalent Export dialog workaround, there's no need to select the rectangles first, but it's still a bit of a pain having to repeatedly hide and unhide it, if you're trying to fine-tune the sizes and positions of the slices.

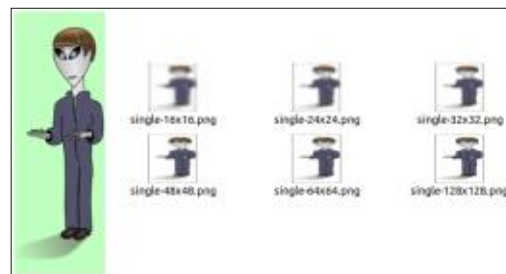
But perhaps you want the rectangle included, to provide a nice border for your exported PNG. You take the time to set the stroke width and color... only to find that your own choice of styles is replaced by the extension after the export. The rectangle's stroke is removed and the fill is replaced with a shade of gray (file already exists and was not overwritten), red (file exists, but was overwritten), or green (file was created for the first time). If you want to try the export again, you'll need to revert all those back to their original styles unless you really want a red overlay added to all your PNGs!

In my opinion, if you want to export multiple slices of your document defined by rectangles, you may as well just use the standard Batch Export approach, with an optionally hidden slicing layer. The benefits of the extension just aren't great enough to make it a compelling new method of performing this task.

This extension does offer one other trick, however: Icon mode. This is enabled via the checkbox of the same name, and while it initially appears useful, it's also got a major flaw that makes it less than practical in a lot of cases. What this mode does is to ignore the DPI setting, and instead create a series of square images for each slicing region, using the pixel sizes defined in the "Sizes" text box. Unfortunately, it does this by stretching each image to fit the square aspect ratio. In short, your slicing "rectangle" in this case absolutely has to be a square, otherwise the content will be stretched out of proportion. A much better approach would have been to scale the content in proportion, and automatically center it in the square. This would work equally well for slices that are

already square, and those of a different aspect ratio. But alas, the extension offers no such option.

The image below shows the result of using Icon Mode on a single image from a character sheet. On the left you can see the original Inkscape drawing, complete with the slicing rectangle (in green, due to this screenshot being taken after the initial export). To the right, you can see the icons that were produced. Clearly not the result I would have liked or expected.



So there we have two of the new extensions. I hate to be cynical, but I can't really see much benefit in either of them. The Frame extension could perhaps be useful if it allowed some padding to be specified, and created real rectangles instead of paths. The Export Layer Slices extension could be useful if it didn't also include the slicing rectangles in the output, and

if it didn't stretch the images out of proportion in Icon mode.

What's most annoying is that these two extensions are frustratingly close to working well together. Imagine if the Frame extension's default behaviour was to create real rectangles in a new "slices" layer (with optional padding, of course). Instantly, it becomes an easy way to create the initial slicing rectangles for the Layer Slices extension if you have a lot of elements to export. But instead, we get these two extensions, neither of which are great on their own, and which don't work well together. What a shame.



Mark uses Inkscape to create comics for the web (www.peppertop.com/) as well as for print. You can follow him on Twitter for more comic and Inkscape content: [@PeppertopComics](https://twitter.com/PeppertopComics)

The daily waddle

400 LINES OF CODE...
400 ERRORS...
MUST BE A COINCEDENCE!





This month, we're going to take a look at one of Ubuntu's drawing programs, specifically for doing diagrams like flowcharts. It's DIA – the open source answer to Visio (not sure what the question actually was).

VISIO'S LINUX BROTHER

Now, make no mistake about it, I like Visio a lot. I used to do third-level support at Microsoft for Microsoft Business Graphics Products, which was mostly Visio, PowerPoint, and Microsoft Publisher.

One of the neatest things I EVER saw a computer do was a Visio feature at the time. In training, they had us use a particular wizard in Visio to map the entire Ethernet network we were on at the time. Within just a few minutes, it came back with a complete network diagram, including pictograms for the actual hardware it found (specific computers, printers, etc.), not just generic ones. It was ASTOUNDING. Doing that job manually would have been a

Herculean task, Visio literally did it, accurately, in a few minutes.

Although it's obsolete now, I actually recently purchased a copy of the 2000 edition of 'Visio for Enterprise' specifically because it has that feature. I've sometimes daydreamed that one could have possibly built a career back in the day on the premise of doing network diagramming, taking several days or weeks at the job with one's feet on the desk all day, only to produce a brilliantly made diagram with almost no effort on the last day of a contract.

Don't judge, if anyone knew how easy it was, they would completely discount the end result quality and not want to pay, due to the ease of effort. Expertise and knowledge should have value. Learned the lesson the hard way about making things look too easy (using Lotus 123 for DOS support back in the 90's, but maybe that's a story for another day....).

At any rate, flowcharting capability is important in computer

programming, for the sake of designing a program's input, output, and overall flow, and also very important in business to chart the process flows that a business needs in order to operate, like the entire customer service process, or the order filling process, or the product fabrication process. Flowcharting these processes helps with visualizing and designing them, and is a good way to help make sure that likely contingencies and outcomes are properly planned for.

INSTALLING DIA

DIA can be installed in multiple ways on Linux. For example, it's available from the Synaptics Package Manager, or from the command-line. Long-time readers know very well that we're about to head for the command-line.

Let's try something a little different this month in terms of how to launch a terminal session. Hit the key combination CTRL-ALT-T on your keyboard. That key combination will start a Terminal

command-line session. In Terminal, type:

```
sudo apt-get install dia
```

and hit Enter. Answer any prompts appropriately, and DIA will be installed.

Remember, SUDO stands for Super User Do, and indicates you want to perform an administrator level function under your current user login. Apt-get is the Debian distribution command-line tool for software management (Ubuntu is based on the older Linux distribution Debian), and of course install is the installation functionality of apt-get.

LAUNCHING DIA

Now that DIA is installed, click the App Drawer (9 white boxes in a grid, bottom-left of your screen).

Use the dots on the right to page up and down to look for DIA, or just type DIA at the top of the screen in the search box:



Click DIA and the application will launch (shown bottom left)

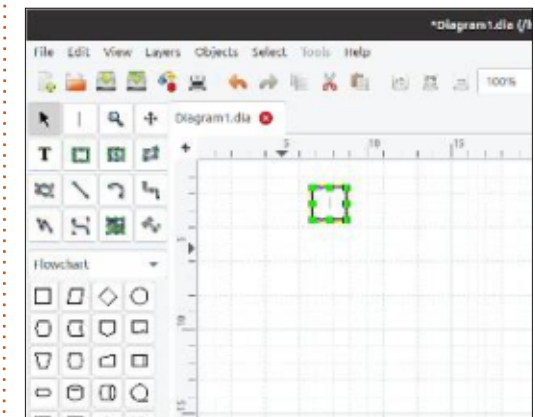
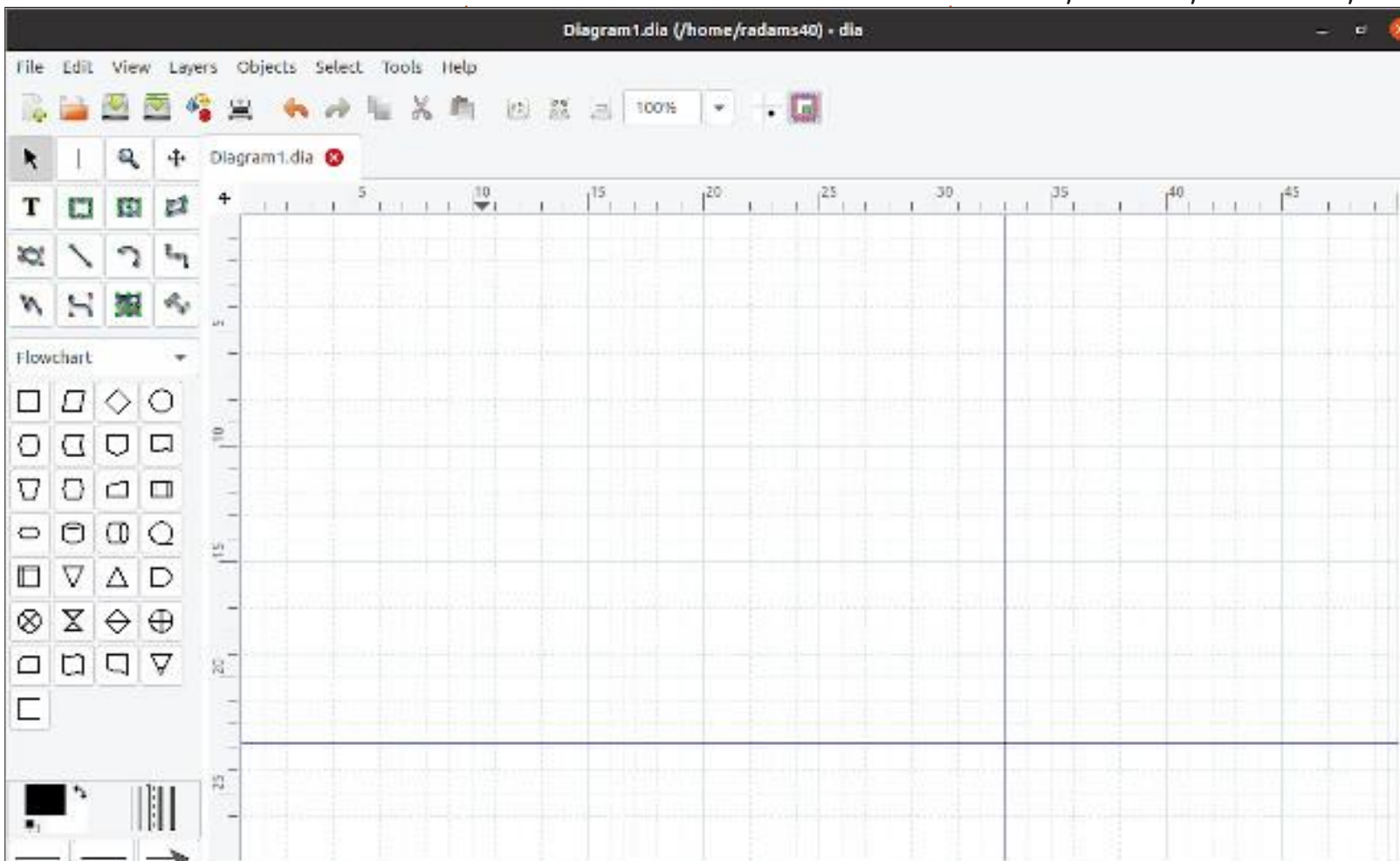
MAIN INTERFACE

At the top of the screen, there are a series of tools. From left to right, they are: New File, Open File, Save File, Save File As, Export File, Print, Undo, Redo, Copy, Cut, Paste, Zoom In, Zoom Fit, Zoom Level,

Zoom Drop-down, Toggle Snap-to-Grid, and Toggle Snap-to-Object. Most of these should be self-explanatory, basic functions. The Snap-to-Grid and Snap-to-Object options can be very helpful in keeping objects in your diagram aligned properly.

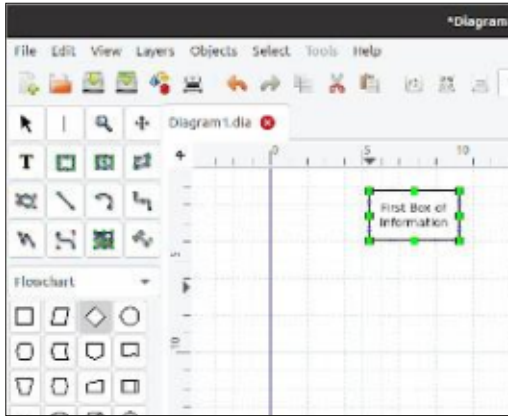
BASIC FUNCTIONALITY: ADDING SHAPES

Let's try clicking on a shape to add a simple box to the screen. In the toolkit on the left, you'll see a square figure. Click that, then click where you want to place it on the screen/page, dragging from top-left to bottom-right in order to place and size it as desired:

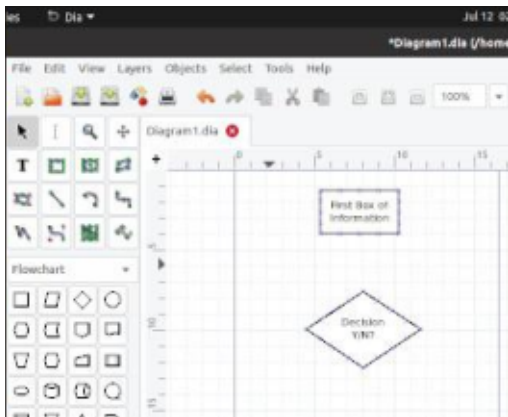


Once you've added the box, Dia will default to Text entry mode, allowing you to enter a label within

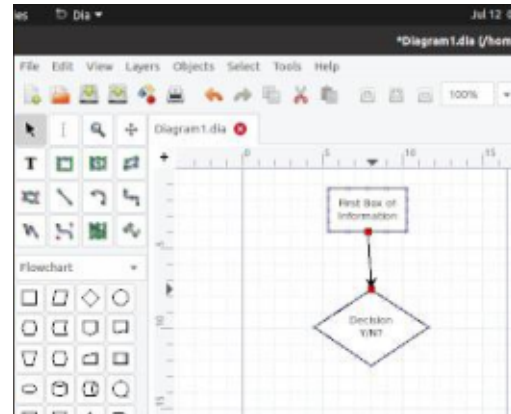
the figure:



Now, click the diamond shape in the toolbox on the left, which is a Decision box, and add it below the existing box, in the same fashion:



available lines. Let's try the basic connector, 3rd row, 2nd item. Hover over the first box until you see its border change colors. Click to anchor the beginning of the line, then move over the second box until you see its outline also change color, then click to stamp the line down, connecting the two boxes. Notice the connector line has a pointer to indicate the direction of process flow:

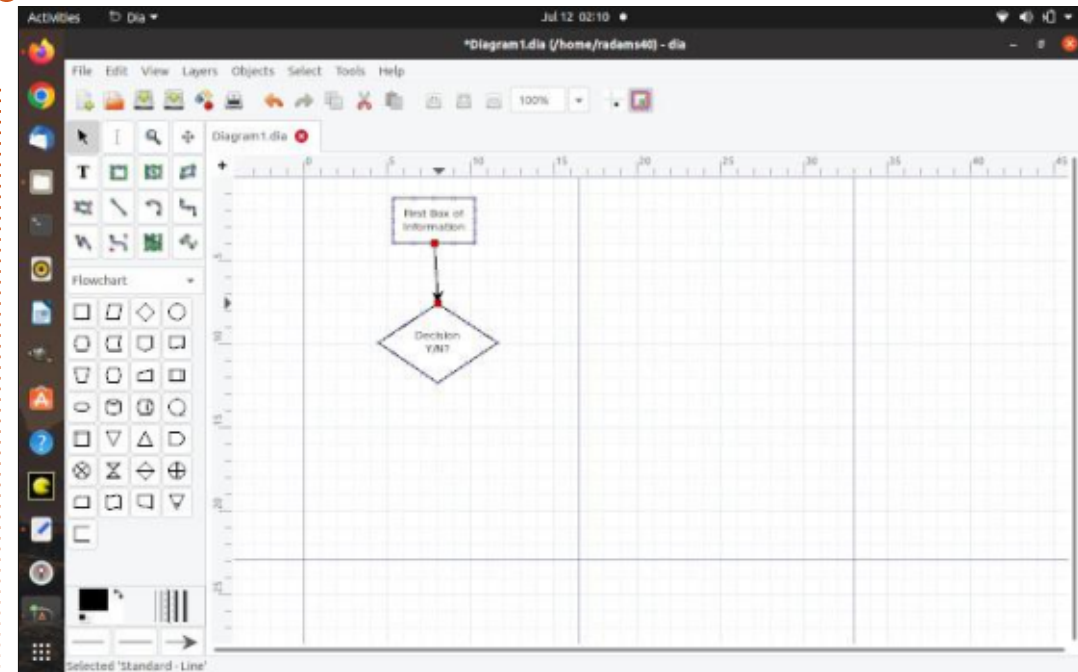


If you use the Selection icon in the toolbox (upper-left, looks like a mouse pointer arrow), you can now click and move either box around and they will remain connected.

Next month: More tools and functions within Dia.

ADDING LINES

In order to show the relationship between steps of a process, we use connecting lines. Above the flowchart palette, you'll see the



Richard 'Flash' Adams lives in rural north Alabama and has been a computer support technician, a business analyst, a software salesman, a sales analyst, a QC team lead, and is now disabled/retired. He enjoys reading, NFL football, computer and video games, cooking, and playing with Baby, his cockatiel. Feedback and suggestions are welcome at

acer11kubuntu@gmail.com.



BACK NEXT MONTH



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



Linux on Your iPad

For as low as \$4.95, you can have your own personal Linux cloud computer in minutes on any device.





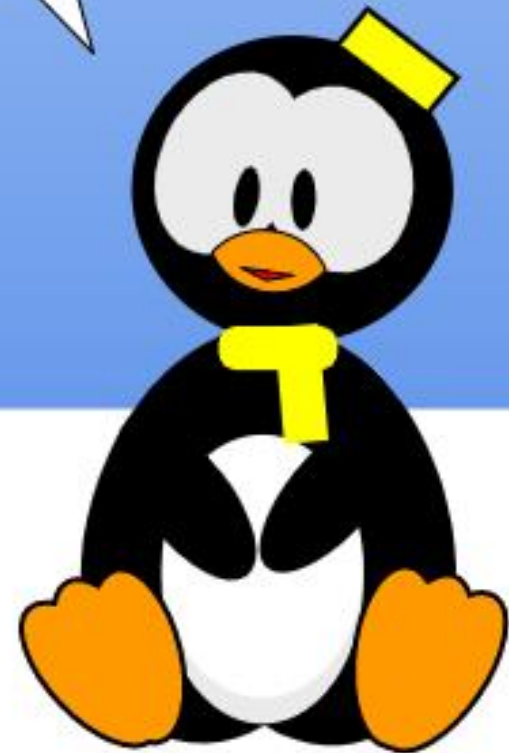
UBPORTS DEVICES

Written by UBports Team



The daily waddle

**NO, YOU CAN'T CLAIM BENEFITS
JUST BECAUSE YOUR ACCOUNT IS
DISABLED!!!**





In FCM#181, Adam Hunt says in his Review that we have to live with Firefox on snap on Ubuntu 22.04, unless you want to compile from source “or something equally esoteric.”

Two big problems with snap have been its slow startup on a freshly-booted computer for older distributions, and sometimes overzealous security restrictions. Now, it seems to be even slower on Ubuntu 22.04, to the point where starting up Firefox takes outrageously long after a reboot, even on a reasonably modern computer!

(Edit: Since writing this article, Canonical has been actively working on reducing this time, with good results.)

Along with snap’s proprietary nature, these problems have, unfortunately, led to a lot of “hate” towards Ubuntu on some forums. This is a pity, because hate is a powerful and unnecessary emotion.

Anyway, the point here is to

discuss an alternative that doesn’t involve hard work such as compiling from source.

So, here’s a great alternative to think about...

FLATPAK

Like snap, flatpak supplies packages with their dependencies and extra security. As a bonus, you can use Flatseal to tweak each package’s security. Plus, some packages are available on flatpak but not snap, e.g. Avidemux, Meld (but also vice-versa, e.g. Adobe Acrobat Reader). I’ve also found that flatpak tends to have more up-to-date packages than snap, e.g. GIMP, Krita. Of course, both snap and flatpak generally hold more up-to-date versions than the Ubuntu repositories, which quickly fall behind.

On Ubuntu 20.04, and now Ubuntu 22.04, I installed flatpak alongside snap. My software centre thus offers a choice of deb, snap, or flatpak for each package (where available), and flatpak is included in

the automatic updates. Naturally, I replaced the snap version of Firefox with the flatpak version.

Some people dislike snap so much that they uninstall the entire snap system. While you can do this, I don’t recommend it on Ubuntu, because Canonical depends on it to supply some features, e.g. Livepatch.

WHAT’S THE POINT?

- Comparing snap and flatpak:
- Snap and flatpak share the advantages of higher security and full dependencies.
 - Both systems share the disadvantage of needing more disk space, and sometimes not quite fitting in with the desktop theme.
 - Snaps are slow, sometimes ridiculously so, when first loading after starting or restarting the computer.
 - Security can be overzealous, but you can tweak flatpak security with Flatseal.

INSTALL FLATPAK

If you’re interested, here are the steps to install flatpak and Flatseal.

Install Flatpak and its Gnome connection. The dependencies include the GUI app Gnome Software, which will replace Ubuntu Software.

```
sudo apt install gnome-software-plugin-snap gnome-software-plugin-flatpak
```

Remove the now-redundant Ubuntu Software app.

```
sudo snap remove --purge snap-store
```

From your menu, start Gnome Software, which looks similar to Ubuntu Software. Check that your updates are set to automatic, unless you want to manually control them: Menu (the hamburger menu at the top-right) > Update Preferences. But don’t install or uninstall apps yet.

Restart your computer to allow flatpak to start properly. This is important; don’t skip this step.

Connect flatpak to the central

MY OPINION

repository Flathub.

```
flatpak remote-add --if-not-exists flathub https://flathub.org/repo/flathub.flatpakrepo
```

Install Flatseal. Because this is the first time using Flathub, it might take a minute or so for flatpak to initialise it; this won't happen again.

```
flatpak install com.github.tchx84.Flatseal
```

When you use the terminal, you'll be asked for confirmation. Just enter "y".

That's it! Flatpak is installed and available. To learn more about using flatpak from the terminal, enter `man flatpak` into the terminal. Or, ignore the terminal, and install and uninstall packages from Gnome Software; note the Source option at the top-right when installing an app.

REPLACE SNAP FIREFOX WITH FLATPAK

You can replace the snap version of Firefox with the flatpak version. Warning: You will lose your Firefox settings, unless you have signed in

and synchronised them.

Remove the snap version of Firefox.

```
sudo snap remove --purge firefox
```

Install the flatpak version of Firefox.

```
flatpak install org.mozilla.firefox
```

If you prefer to do this from the GUI (using Gnome Software) instead of the terminal, be aware that it lists two different Firefox entries, one each for snap and flatpak.

REMOVE SNAP (ONLY IF YOU INSIST)

If you truly want to get rid of the snap system itself, here's how. I don't recommend this; do it at your own risk!

Purge the snap system.

```
sudo apt remove --purge snapd
```

Optional: Delete your snap directory.

```
rm --recursive ~/snap
```

Restart your computer.

SUMMARY

If you follow the steps in this article to add flatpak, you will have a wider choice of software, sometimes more up-to-date, and with greater flexibility.



HOW-TO

Written by Ronnie Tucker

Write For Full Circle Magazine

GUIDELINES

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

RULES

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

• For advice, please refer to the **Official Full Circle Style Guide:** <http://bit.ly/fcmwriting>

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

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

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

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

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

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

TRANSLATIONS

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

REVIEWS

GAMES/APPLICATIONS

When reviewing games/applications please state clearly:

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

HARDWARE

When reviewing hardware please state clearly:

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

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



REVIEW

Written by Adam Hunt

Xubuntu 22.04 LTS

The release of Xubuntu 22.04 LTS on 21 April, 2022, brought a lot of ... very tiny changes. In fact, this whole development cycle since the last long term support (LTS) release has seen very little new and I am going to make the case that that is actually a good thing that will please most Xubuntu users.

Being an LTS release, Xubuntu 22.04 LTS will be supported for three years, until April, 2025.

Xubuntu 22.04 LTS is also the 33rd release for Xubuntu. The first one was Xubuntu 6.06 LTS, made back on 1 June, 2006, which was sixteen years ago.

Xubuntu remains one of the few flavors of Ubuntu that has never changed its desktop; it is still using Xfce. That contrasts with Ubuntu which is on its third user interface, and Lubuntu on its second one. Xubuntu certainly has brought its users stability and that might be one reason why it has such a dedicated fan base.

INSTALLATION

I downloaded Xubuntu 22.04 LTS from the official website via BitTorrent and carried out an SHA256 sum check on it from the command-line to ensure that the download was correct.

Like Ubuntu and Lubuntu, Xubuntu 22.04 LTS has increased in download size by 500 MB since the last release, for reasons that are not clear. Xubuntu 22.04 LTS is a 2.5 GB download compared with 2.0 GB for Xubuntu 21.10.

I used a USB stick equipped with

Ventoy 1.0.73 to boot up Xubuntu 22.04 LTS. Ventoy makes the process really easy, just cut and paste the ISO file onto the stick and Ventoy takes care of all the unpacking at boot-up. It also allows multiple ISO files to be on the same USB stick, subject to space, and gives a choice of which one to boot to. It makes testing out multiple distributions an easy task.

SYSTEM REQUIREMENTS

The minimum system requirements for Xubuntu have

been the same since Xubuntu 21.04, which was the first release in this development cycle. They remain:

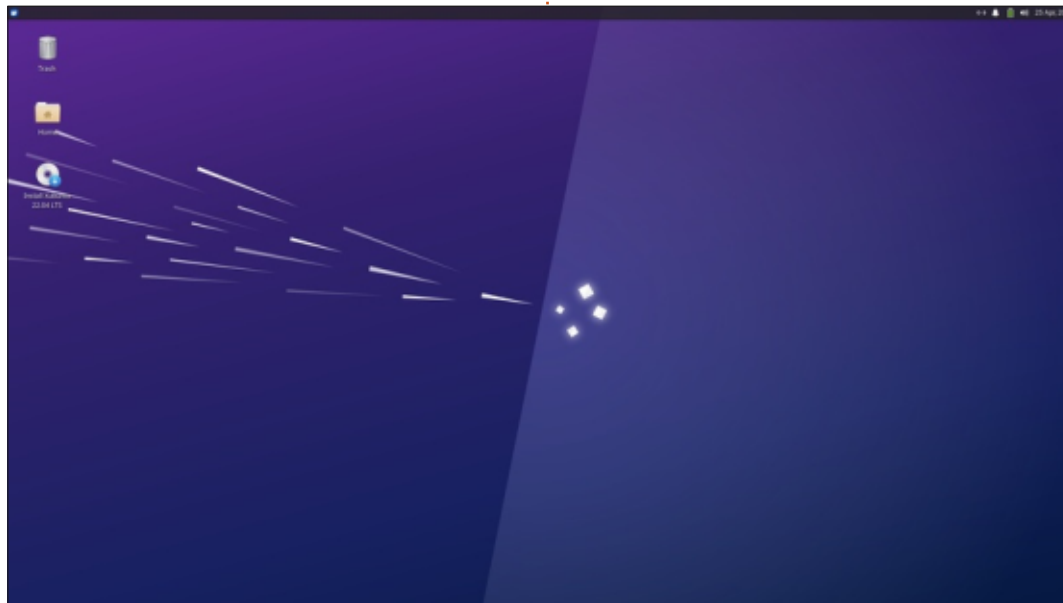
- 1.5 GHz dual core processor
- 2 GB of RAM
- 20 GB of hard drive space

This means it can be run on early Vista boxes and later hardware.

NEW

Xubuntu 22.04 LTS uses the Xfce 4.16 desktop, with the GTK 3.24.33 toolkit. It has a new graphic wallpaper for this release, too, which is one of 20 wallpapers included. Six of the wallpaper designs are new scenery ones from the Xubuntu 22.04 LTS wallpaper competition, while many of the others are favorites from recent Xubuntu releases. You can always substitute your own wallpaper too, if desired.

The rest of the changes in this release are to applications, described below.



REVIEW

As noted, there is very little new in this release, and I think that is a good thing. Whenever I talk with Xubuntu users, they like it the way it is and don't see a need for much in the way of changes. The last major change was probably Xubuntu's move to make Whisker Menu the default menu system, and that was back in Xubuntu 14.04 LTS, eight years ago. Large scale changes are only going to make users unhappy.

SETTINGS

This release continues with "Greybird" as the default window color theme. There are a total of six window themes provided: Adwaita,

Adwaita-dark, Greybird, Greybird-dark, High Contrast and Numix, as well as a choice of six icon themes. The choice of two different dark color schemes should keep dark theme fans happy.

APPLICATIONS

Some of the applications included with Xubuntu 22.04 LTS are:

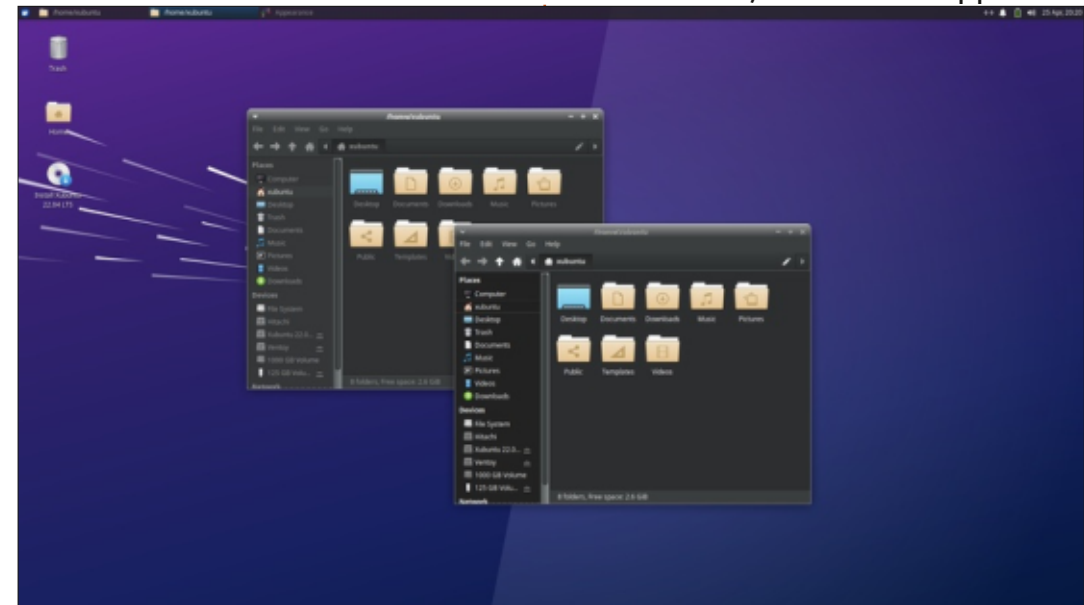
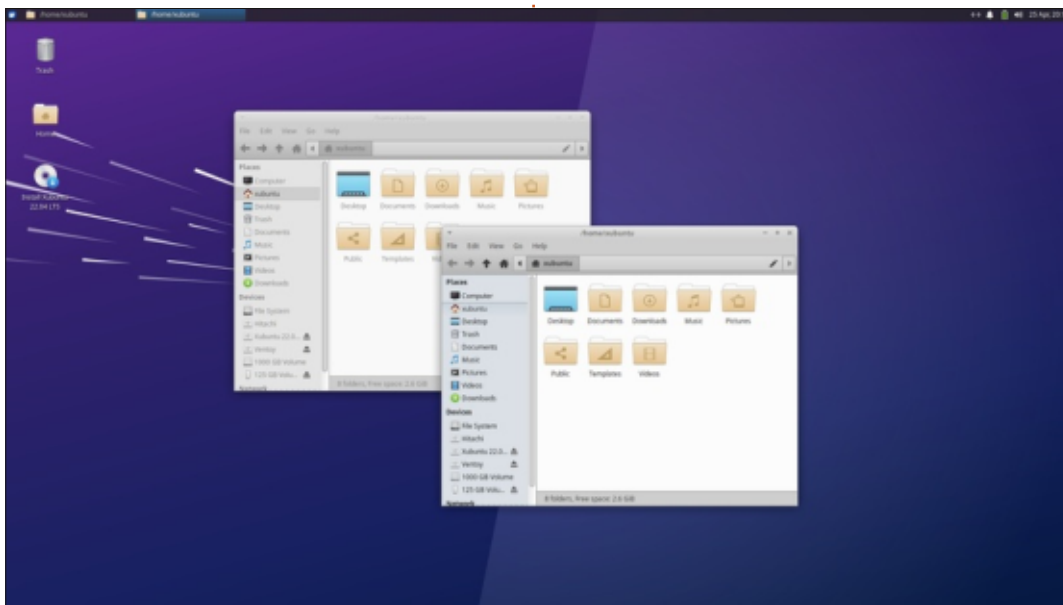
- Atril 1.26.0 PDF viewer*
- CUPS 2.4 printing system
- Catfish 4.16.3 desktop search
- Firefox 99.0.1 web browser**
- GIMP 2.10.30 graphics editor
- Gnome Disk Utility 42.0 disk space and health monitor
- Gnome Disk Usage Analyzer 41.0

- disk display*
- Gnome Software 41.5 package management system
- Gparted 1.3.1 partition editor
- Hexchat 2.16.0 IRC client
- LibreOffice 7.3.1 office suite
- Mousepad 0.5.8 text editor
- Parole 4.16.0 media player*
- PulseAudio 15.0 audio controller
- Ristretto 0.12.2 image viewer
- Rhythmbox 3.4.4 music player*
- Simple Scan 42.0 scanning utility (re-badged by Gnome as "Document Scanner")
- Software Updater 22.04.9 (update-manager) software update manager
- Synaptic 0.90.2 package management system*
- Thunar 4.16.10 file manager
- Thunderbird 91.8.0 email client

- Transmission 3.00 bittorrent client*
- Wget 1.21.2 command-line webpage downloader
- Xfburn 0.6.2 CD/DVD burner*
- Xfce4 Panel 4.16.3 desktop panel*
- Xfce4 Power Manager 4.16.0 system power manager*

* indicates same application version as used in Xubuntu 21.10
** supplied as a snap, so version depends on the upstream package manager.

Xubuntu 22.04 LTS is one of the few Ubuntu flavors to include a default graphics editor, in this case GIMP, and also a CD/DVD-burning application, Xfburn. Most other flavors, including Ubuntu, Kubuntu and Lubuntu, have now dropped



REVIEW

the CD/DVD burning application from the default list.

Xubuntu 22.04 LTS does not include a webcam application or video editor although there are several choices of each available for installation in the repositories.

This release has LibreOffice 7.3.1 and it is supplied complete except for LibreOffice Base, the database application. Base is probably the least used component of LibreOffice, but can easily be installed if needed.

Xubuntu 22.04 LTS represented a decision point for all the Ubuntu flavors on the question of Firefox as a snap package. At Mozilla's

request, the Ubuntu developers moved to a snap version of Firefox in the 21.10 release, although the traditional .deb package was still available in the repositories for that one last release and the Xubuntu developers stayed with the .deb package for the 21.10 release. Starting with the 22.04 LTS releases, Firefox is available only as a snap package, and that meant that the Xubuntu developers had to either switch to the snap or do something else, such as compile it themselves, or switch browsers. The release of Xubuntu 22.04 LTS solved the issue, as the Xubuntu developers have gone with the snap version of Firefox. They noted all the advantages of the snap version in the release notes, including that

new versions are received more quickly directly from Mozilla, and better security, due to the isolation of Firefox.

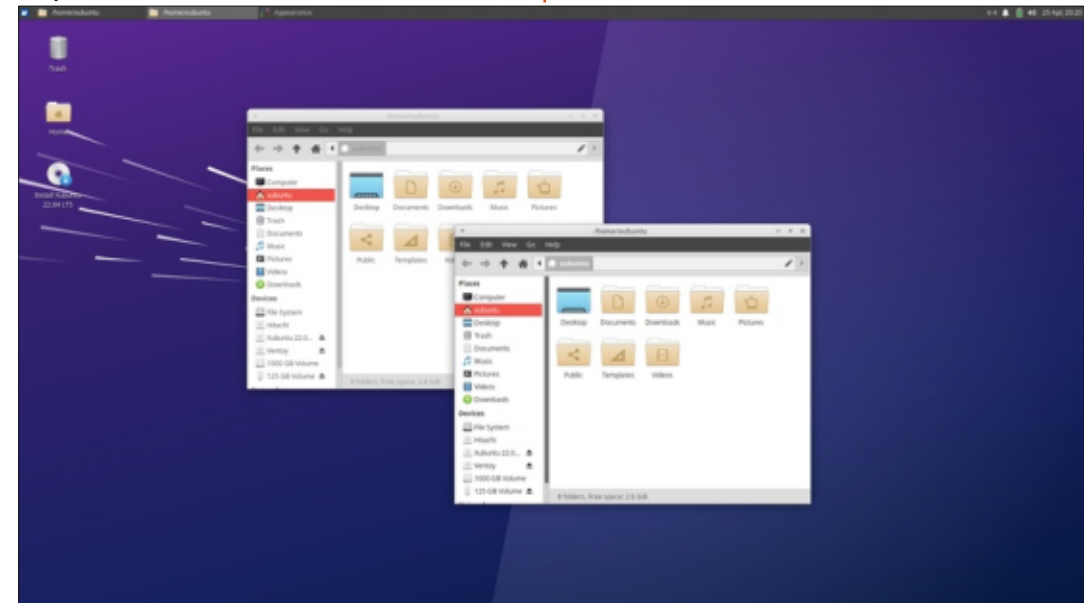
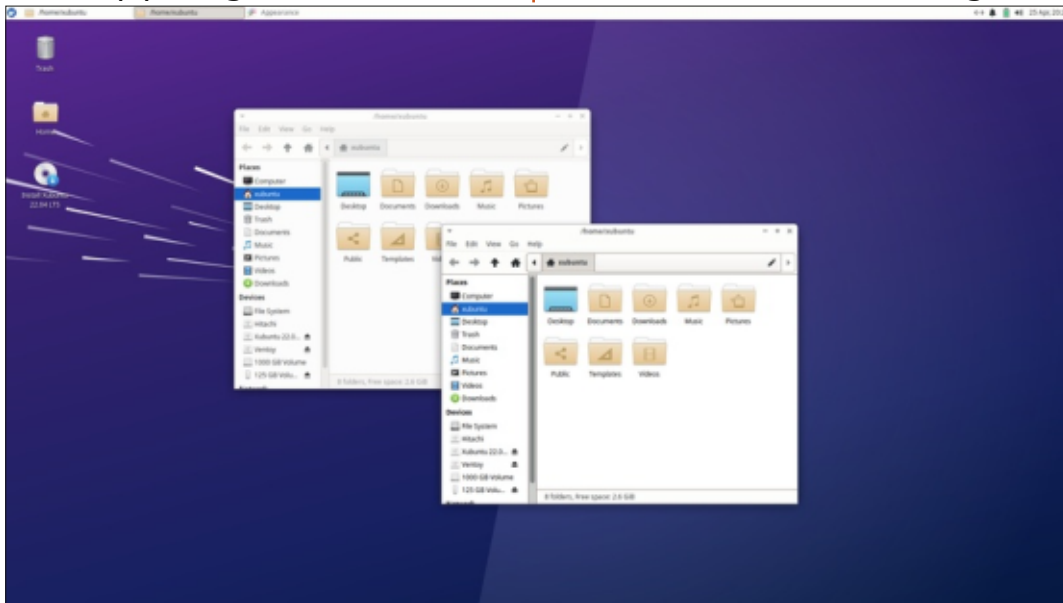
The main complaints about snap packages are application opening time and inconsistent theme adoption. In my testing, I found that while the snap version of Firefox was slow to open the first time, subsequent openings were around two seconds, which is as fast, or faster, than the .deb version. On Xubuntu 22.04 LTS, Firefox took up themes fine, too.

In the other applications provided by default on the ISO, there have been some useful improvements. For instance, the

Mousepad text editor now includes a spell-checking plug-in that even provides for underlining spelling errors as you type, which is a welcome improvement. Mousepad also now has a session backup and restore feature.

The Ristretto image viewer now has improved support for thumbnails, and some performance improvements. The Whisker Menu Plugin 2.7.1 has added some new customization options for preferences and CSS classes – which should be useful to people doing their own theme development.

As always, the Whisker Menu is the most flexible and customizable



REVIEW

menu used in the Ubuntu flavors, allowing resizing among other features. It really sets Xubuntu apart.

CONCLUSIONS

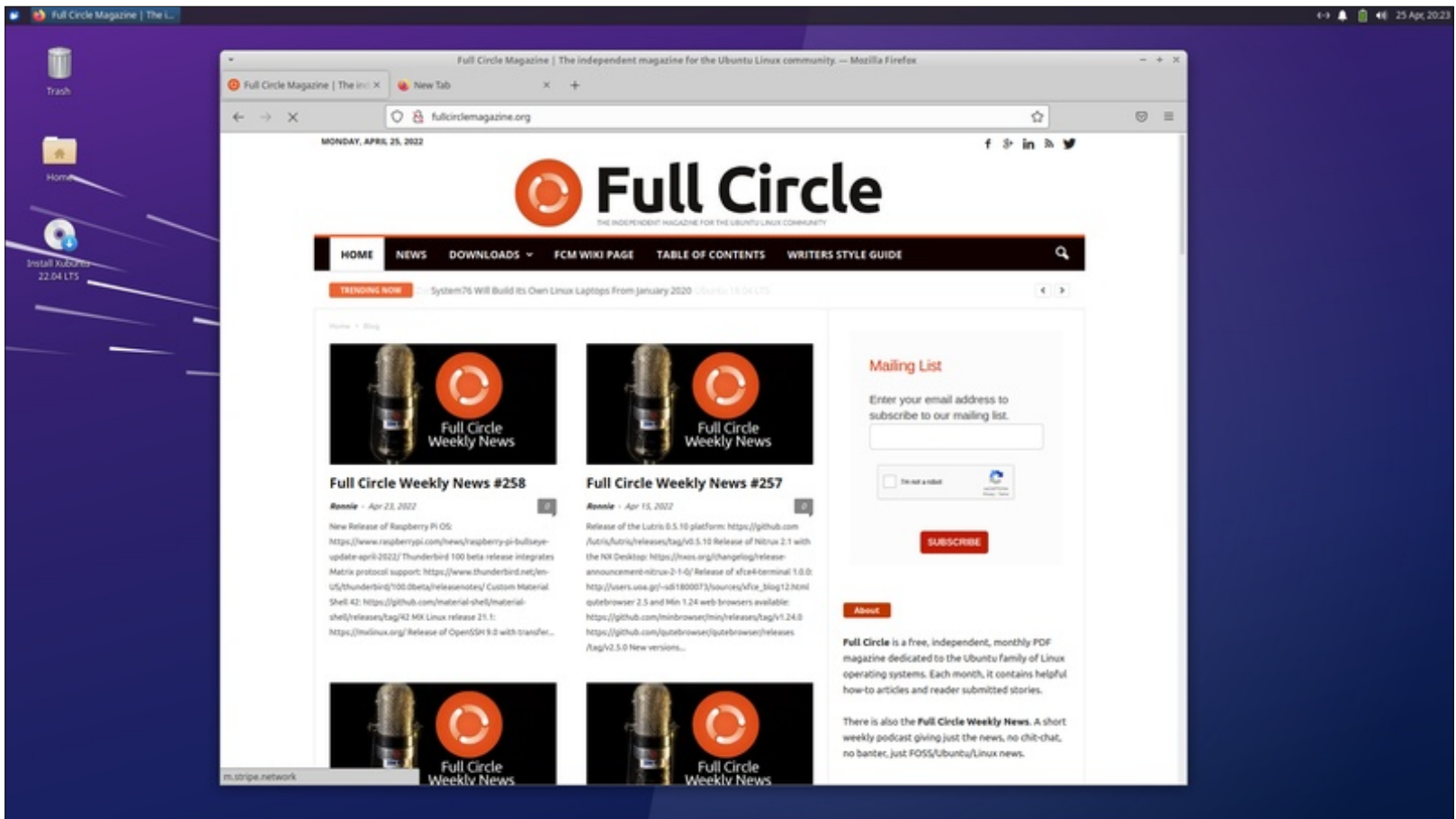
Xubuntu 22.04 LTS is a very well-polished and mature distribution with no obvious drawbacks or flaws.


I think that Xubuntu fans are

going to be pleased with Xubuntu 22.04 LTS, mostly because very little has changed since the last LTS release. The Xubuntu users seem to like how Xubuntu looks and works, and don't see a need for big changes.

EXTERNAL LINKS

Official website:
<https://xubuntu.org/>



 **Adam Hunt** started using Ubuntu in 2007 and has used Lubuntu since 2010. He lives in Ottawa, Ontario, Canada, in a house with no Windows.



As part of our ongoing look at some Linux distributions that are not Debian or Ubuntu-based, this month we are going to take Void Linux out for a test drive.

Void Linux is an independent distribution, meaning it is not based upon any other “upstream” distribution. It also has no corporate backing and is created by a team of volunteer developers, with no paid staff.

The official website ominously invites you to “enter the void”, but in reality it turns out to be a friendly distribution with the Xfce desktop. Good documentation makes it easy for newcomers to download it and use it, too.

Void Linux is a rolling release so there are no “new releases”, unlike in the Ubuntu world. Instead, there are regular software updates and every few months a new download version is posted which incorporates all the updates to that point. I downloaded the Void Linux 20210930 version which was five months old at that time and that

meant a lot of updates!

BACKGROUND

Void Linux was started by Juan Romero Pardines from Spain in 2008. A NetBSD developer, he was working on a personal project (a new package management system) and needed a test environment to try it out on. The command line-only ‘X Binary Package System’ (XBPS) package manager was successful and attracted some additional help to work on the distribution.

Pardines left the project in 2018 and it was taken over by the community who now number over 700 developers who enthusiastically keep it going. XBPS is also developed by the Void Linux team and remains a feature of the distribution.

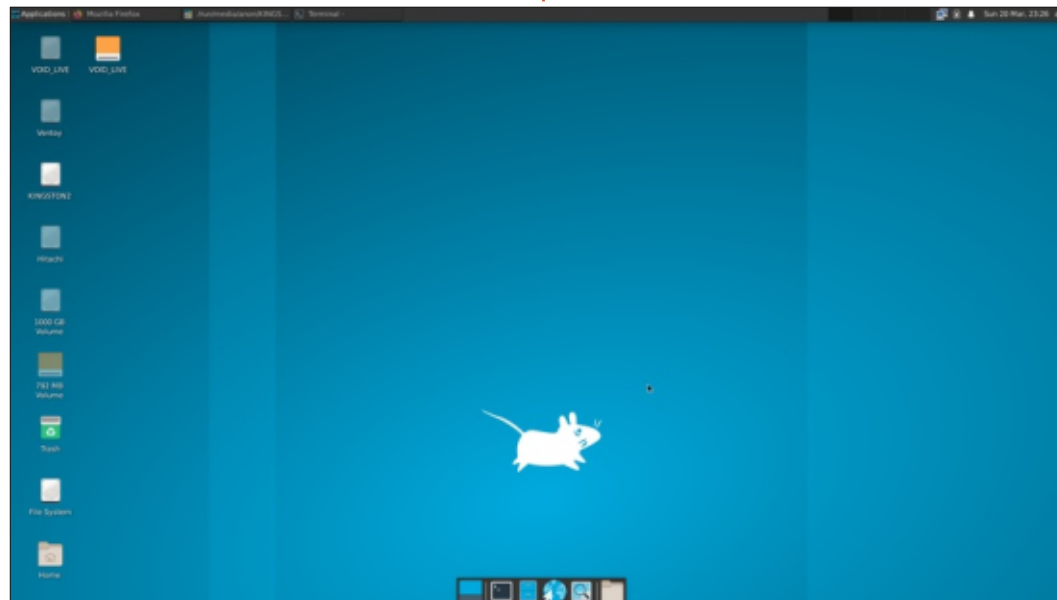
Void Linux comes only in 64-bit versions for i686, x86-64, ARMv6, ARMv7 and ARMv8 architectures. It has two versions, “base” with no graphical interface, and “Xfce” with the Xfce desktop environment. The base version is a 568 MB download while the Xfce version is 871 MB, at

least when I tested them. This is in the middle ground for download size between really lightweight distributions like SliTaz 5.0 at 53.6 MB and Ubuntu 21.10 at 2.9 GB.

The initialization system employed is runit rather than the common systemd used in most distributions today, including all those based on Debian and Fedora. Runit seems to result in fast boots at least.

The Void Linux website is well worth mentioning. Unlike many distribution websites, it is well-thought out and information is easily found. It also has very complete and well-written documentation which is something that makes using Void Linux easy, as all the answers are quickly found. There is even a searchable database of applications to install. This level of documentation makes Void Linux suitable for Linux beginners.

There is no need to feel alone in the void, as help and community connections are available. The



REVIEW

project has a presence on Twitter, a libera.chat IRC channel, and its own dedicated subreddit too.

GETTING VOID LINUX

I downloaded the 64-bit Xfce desktop version void-live-x86_64-20210930-xfce.iso from the downloads page on the website. Downloads are all via https, with no bittorrents advertised.

A SHA 256 sum is available and I ran a test from the command-line to make sure the download was correct, which is always recommended.

INSTALLING

I used Ventoy 1.0.71 to put Void

Linux onto a USB stick. This is as easy as just copying and pasting it onto the stick from your file manager, as Ventoy takes care of the rest at boot-up. I ran a series of live sessions to try it out and it ran very well from the USB.

To permanently install most Linux distributions, there is usually a nice, friendly icon on the live session desktop, and clicking on it gets the process started, but not so on Void Linux. In fact, the desktop and menus give no clue as to how to install it from a live session but everything is well explained in the documentation, of course. The installation is done from the command-line with:

```
sudo void-installer
```

Overall, Void Linux is not complex to use, as long as you are not reluctant to open a terminal to use the XBPS package manager. The great documentation makes that easy to do.

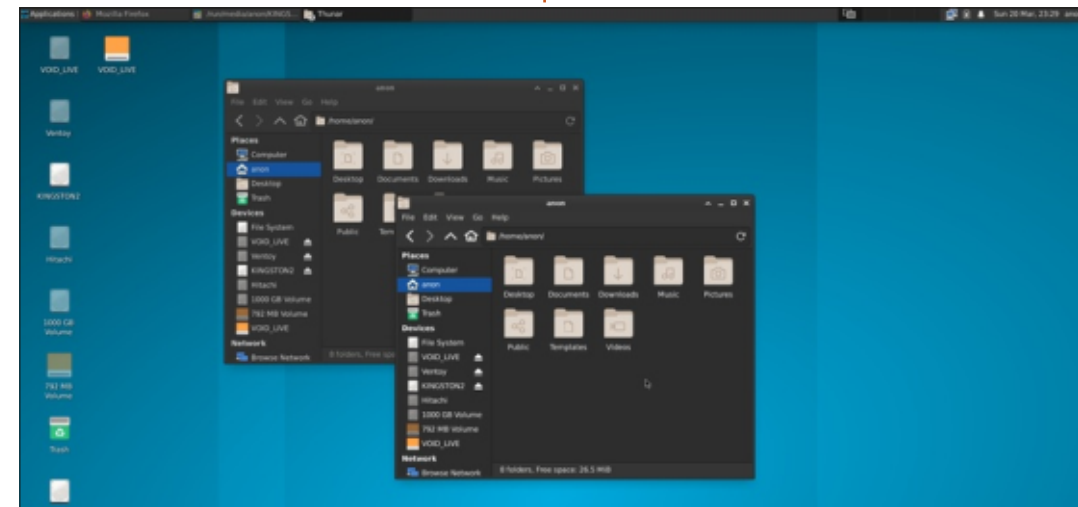
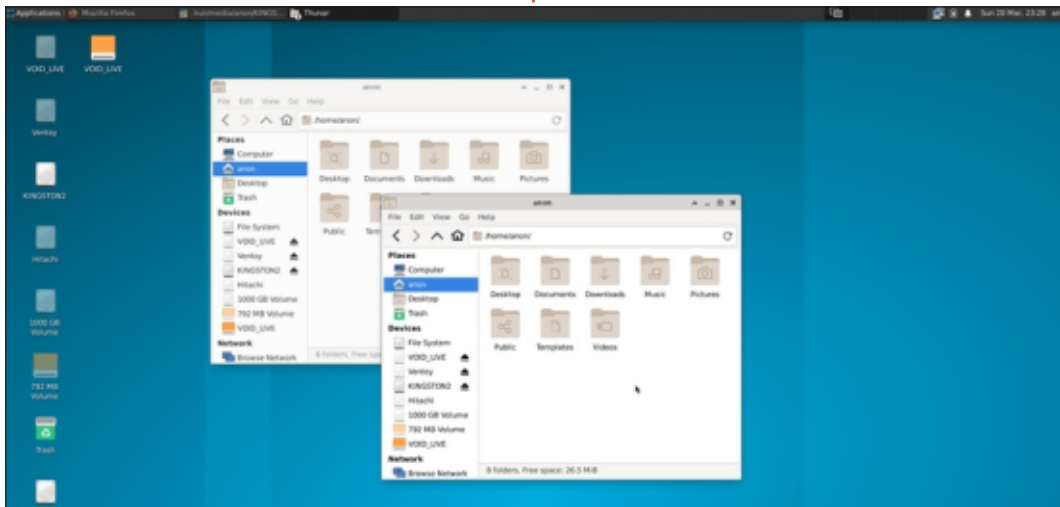
SYSTEM REQUIREMENTS

The documentation says that the minimum hardware for an installation is an x86_64 (64-bit) processor, 96 MB of RAM, and 700 MB of disk storage space. This seems pretty low until you realize that this is for the non-graphical “base” version and not the Xfce desktop version. For that, no hardware is specified but at least 2 GB of RAM would be a reasonable guess.

As the downloaded ISO file is complete, an internet connection is not needed to run or install Void Linux but, of course, you won't get any updates.

I tested it out on a nine-year old desktop with a 3.3 GHz dual-core processor and 6 GB of RAM, and it ran very well.

One of the dangers of running any rolling release distribution on old hardware is that the operating system may be upgraded at some future point to a new kernel or other software that no longer supports your increasingly dated hardware – the so-called “system-breaking update”. At that point, you will need to either upgrade to newer hardware or move to a distribution that supports your



REVIEW

older hardware, like SliTaz or Puppy Linux.

TRYING OUT VOID LINUX

Booting up Void Linux gives two choices, "live" and "RAM". The live mode loads faster but swaps between RAM and the installation media, while "RAM" mode loads the whole thing into RAM, if you have the capacity.

On my first boot, I tried "live" mode and it quickly opened a beautiful, friendly, blue Xfce desktop. I was honestly expecting something more nihilistic from the void!

In trying to take some screenshots, I discovered that by default it comes without a screenshot tool, and, also, in "live" mode you are locked out of both updates and installing packages.

I booted into "RAM" mode and that used up about 2.5 GB of RAM. The updates worked when I ran those from the command-line using the XBPS package manager:

```
sudo xbps-install -Su
```

The syntax -Su is "system update." That took a while, as there were five months of updates, but it completed the task and consumed about another 1 GB of RAM for a total of 3.5 GB. It was quickly apparent that a "RAM" session requires lots of RAM, but with 6 GB I did not run out.

My next challenge was installing a screenshot tool. Since Void uses the Xfce desktop, I installed the native xfce4-screenshooter package with:

```
sudo xbps-install xfce4-screenshooter
```

and that worked perfectly. The XBPS package manager is actually fairly easy to use after a bit of reading through the documentation. This was starting to

feel easy.

Void Linux's implementation of the Xfce desktop is pure and simple, with no changes or modifications. Following the updates, it was using tools from Xfce 4.16, the current release.

It uses the standard Xfce single menu and not the Whisker menu found on Xubuntu, although Whisker is available for installation in the repositories as xfce4-whiskermenu-plugin.

In the default setup, the Xfce desktop has the xfce4-panel 4.16.3 at the top of the screen and a Mac-style launcher at the bottom. The launcher is actually a second implementation of the panel, which auto-hides when a window touches

it, but it is not easy to configure. Its default icons show: desktop, terminal, file browser, web browser, application finder, and file locations. It actually just duplicates selections from the main menu and creates clutter so, if you don't like it, the launcher is easy to remove from the desktop.

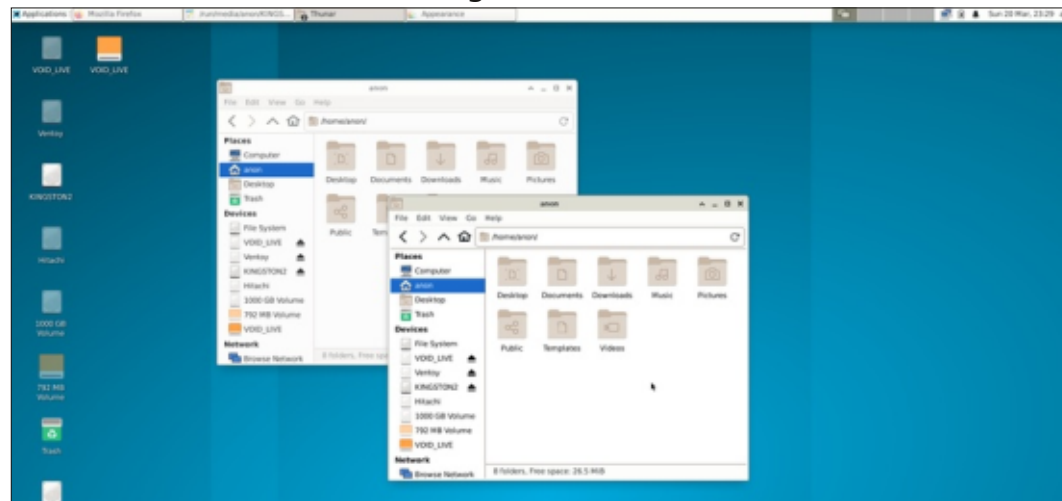
Unusual for a distribution running a live session, the Xfce screenlocker actually locks after ten minutes, and it is useful to know that the live user account is "anon" and the password is "voidlinux" otherwise you won't get back into your live session!

Overall, Void Linux will be really appealing to users who like the Xfce experience and want it clean, plain and unmodified.

SETTINGS

Being pure Xfce, Void Linux has lots of user settings and customization available.

It comes with four wallpapers, all of them standard Xfce mouse logo wallpapers and basically blue in color. Oddly, there is no Void Linux-themed wallpaper. I guess



REVIEW

the developers have left it to the users to make their own. A quick internet search shows many already have.

Other settings include a choice of three window themes: Adwaita, Adwaita dark, and high contrast, plus a choice of three icons sets. So, not a huge range, but enough to keep most users happy. More Xfce themes are available online, too, of course.

APPLICATIONS

Void Linux comes with a very minimal set of default applications, including:

- Firefox 78.14.0 ESR web browser
- Mousepad 0.5.7 text editor
- Thunar 4.15.10 file browser
- Parole 4.16.0 media player
- Ristretto 0.11.0 image viewer
- Xfce Task Manager 1.4.2 system monitor
- Xfce4 Terminal 0.8.10 terminal emulator

...and that is about it!

The updates I ran with the XBPS package manager brought Firefox up to version 91.6.0 ESR and Thunar up to 4.16.10, for example, so it seems the packages are all kept up-

to-date.

As can be seen, there is no default webcam application, no office suite, email client, word processor, or even screenshot tool. The good news is that the repositories are well-stocked with lots of choices and the XBPS package manager can be used to retrieve them all quickly. Every application I looked for I found on the website package listing, including popular applications like Chromium, LibreOffice, Kdenlive, FileZilla, gFTP, Thunderbird, and even more esoteric ones like the Tesseract command-line optical character reader. Other desktops, like LXQt and Gnome are available to install, as well.

I actually like the philosophy of leaving a desktop distribution ISO with just a bare minimum of applications to get started and then

making everything needed easy to install, with good package listings and clear instructions on how to do it. That results in a small ISO download, of course, but it also means that there is no big list of applications to remove or else live with cluttered menus and the associated bigger updates for the unwanted applications. It really is better to let users install what they need although, I will admit, a screenshot tool by default would be nice!

CONCLUSIONS

Despite the nihilistic-sounding name and the website warning that you are about to “enter the void”, Void Linux turns out to be a friendly and upbeat Linux distribution, offering desktop users a clean, pure Xfce experience. Package management from the command-

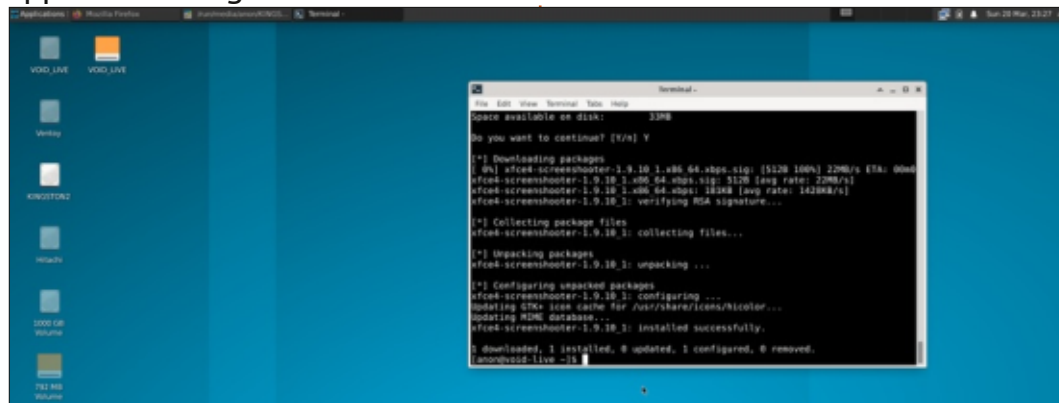
line with the XBPS package manager is a bit unusual, but easy to learn.


The project benefits from all the best that a Linux distribution can offer: a well-designed website with outstanding documentation, a dedicated cadre of volunteer developers, and a good community of helpful people, all backing a well-designed and maintained distribution.

For anyone looking for an Xfce distribution, Void Linux deserves a close look.

EXTERNAL LINKS

Official website:
<https://voidlinux.org/>



 **Adam Hunt** started using Ubuntu in 2007 and has used Lubuntu since 2010. He lives in Ottawa, Ontario, Canada, in a house with no Windows.



LETTERS

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

Join us on:



[facebook.com/
fullcirclemagazine](https://facebook.com/fullcirclemagazine)



twitter.com/#!/fullcirclemag



[linkedin.com/company/full-
circle-magazine](https://linkedin.com/company/full-circle-magazine)



[ubuntuforums.org/
forumdisplay.php?f=270](https://ubuntuforums.org/forumdisplay.php?f=270)

FULL CIRCLE NEEDS YOU!



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

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

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



Q&A

Compiled by EriktheUnready

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

Welcome back to another edition of Questions and Answers! In this section we will endeavour to answer your Ubuntu questions. Be sure to add details of the version of your operating system and your hardware. I will try to remove any personally identifiable strings from questions, but it is best not to include things like serial numbers, UUIDs, or IP addresses. If your question does not appear immediately, it is just because there is such a lot, and I do them, first-come-first-served.

So, the JingPad A1 has come and gone, I suppose by the time this is published in 2 months, things may be different, but I think it died somehow. CuteFishOS last had action on July 3 (and a nothing the month before), another promising project seems to be dead in the water. Why do we have the spectacular rise & fall of Linux projects? As soon as something "nice" comes to Linux, it seems to go silent. I recall such projects as PearOS. Not the thing that parades itself around as that now, but

PearOS 7, I think it was the last decent version that was faster than the OS it was based on with nifty tools. PearOS 8 was incomplete iirc and the website died when it go "released". We could go full conspiracy here and say M\$/Apple paid them to stop, but it seems unlikely. I suspect the final message was to mess with us: "Pear OS is no longer available for download. Its future is now in hands of a company who wants to remain anonymous for the moment. The concept has pleased them it and now wants to continue and improve the system for their own products. I can not give a name but it is a very large company well known ..." What causes a developer to abandon a project, whilst other projects live on? Money does make the world go 'round and I have seen brilliant projects canned because the profit margin would be too small. The business side of things kills the innovation. Is this the reason Red Hat wants to drop games from the repository? Should there be a Kickstarter-type place for Linux projects? Could it be attitude? As with anything in life, practise makes

perfect and I am thankful to my current colleagues for letting me do all the work whilst on shift, I could look at it and go; why should I do it all, or, take the practice an stay on top of the game. I learn more, I don't get bored, I get my muscle memory. I do not see a down side. So is it attitude that needs to change? I don't know the answer to these questions as I don't run any open source projects. If you have any insights on these issues, let us know.

Q: Hi. I have started to learn Ubuntu server and my "server" is an i3 with 128gb SSD and 4G memory. While it all goes swimmingly, I find that I run out of space quite fast. I have Ubuntu Desktop and I know disk usage analyser, but my server has no GUI. Df -h just tells me my drive is at 99%. How do I know what is taking up all the space? I have an image, so I just restore that when I run out, so no real biggie.

A: What you are looking for is du instead of df. If you do a:

```
du -a | sort -n -r | more
```

you will see the biggest files & folders at the top. Now simply slice the top few you want to look at with: head -n 10, for instance, to replace the "more" once you know how many lines you want.

Q: Here I am transitioning to a new laptop from my 10year old one. It is flush with all the bells 'n whistles. I go to install Ubuntu 22.04 and it does not show the option "install alongside Windows". It came with Windows 11 pre-installed.

A: You need to make space on your had drive for Ubuntu to live. You may also need to re-install windows as I have had issues will Dell, where the drive controller is installed as "raid-on" in the BIOS and you need to have it in AHCI for Ubuntu. (changing the way the controller talks to thee drive, may

result in windows not booting.) Each manufacturer has little quirks like this. Secure boot is another option that may be hindering you.

Q: I want to install Docker, but I'm getting bash: version: No such file or directory' error. All from here: <https://docs.docker.com/engine/install/ubuntu/> It is driving me up the wall.

A: The docker site may be out of date or may be the "recommended" way, I'm not sure. Thanks to Daniel (Fleabite) for the easy answer:

```
sudo apt install docker.io
```

Q: Can I install plain Ubuntu on my Raspberry Pi 3b+? It had Ubuntu Mate on before but it behaved sluggishly. I was looking at forums for the best option to do so, but the advice is all mixed.

A: Don't. Yes I know it is a horrible answer but unless you install the IOT core version, it will be as slow as turtles stampeding through peanut butter. You can

save yourself a lot of grey hair by sticking to Raspbian.

Q: I have a docker container with Ubuntu and I wanted to use the pip installer but it gives error SystemError: Cannot compile 'Python.h'. Perhaps you need to install python-dev|python-dev ? It's the latest version btw.

A: Have you considered installing a different version of Python in a virtual environment and try it that way?

Q: I recently updated Vbox versions with addons and it loads, but as I create a new VirtualMachine and start it from a virtual CDROM in order to install Ubuntu22.04 as guest I get this error: The VirtualBox kernel modules do not match this version of VirtualBox. Executing '/sbin/vboxconfig' may correct this. Make sure that you are not mixing builds of VirtualBox from different sources.

A: That last bit is telling, as it seems that you may have

downloaded a debian or Mint .deb file to install it. I cannot really help you as I need more information, but I suggest backing up you VHD's and purging VirtualBox and installing it fresh(not from that .deb). I have seen something like this before, but I cannot remember the outcome. If your OS is older, you may need to add a PPA to get the latest version of VirtualBox.

Q: I was looking for a DR solution for Ubuntu. Something I don't have to constantly manage. Can you help?

A: I am going to assume Disaster Recovery? I have heard good things about this: <https://relax-and-recover.org/> though in my previous job we used Veeam, it was finicky, but it worked.

Q: I'm new to Ubuntu server, but I have been running Ubuntu desktop since 7. I have a logfile that stopped recording, but it made a new one with today's date. This is all fine, but I have a log reader reading off the old file. What are my options?

A: My advice would be to rename your old one to say, log_old with the mv command and then name the new one to the name the old one had, say, log or whatever. You could also configure your log reader to read the new filename.

Q: This may sound weird, but I have two Ubuntu web servers and one nginx load balancer as my lab setup. I have had 404 errors and my friend would say it is the load balancer, how would you know that so fast? How can I learn this dark magic?

A: Actually, your friend would be wrong. A 404 is a file not found error, meaning the file is not found on the host, so query passed the load balancer to the host, a 500 error would indicate that the load balancer cannot find the host. Have a look here: <https://kb.iu.edu/d/bfrc>

Q: I want to stream live gameplay to twitch from my Ubuntu machine. I am told that I need to use OBS studio, but how do I actually do that? On Android it is

Q&A

easy, you download the app and go live.

A: I am sorry, this I know NOTHING about, if we have any readers who have experience with this, please email us: misc@fullcirclemagazine.org

Q: I have set up my machine with the latest Ubuntu and set it up the same as my old 18.04 one (Both Dell 3020 midi towers). Somehow stuff like slack just give me a black screen. There is NO Nvidia involved. Give me the short version please.

A: OK. One word: Wayland.

Q: I have installed an icon theme in Ubuntu that I really like, however it is missing a few icons. I feel that I could make the ones I need, but I have no idea where to start. Can you point me in the right direction?

A: That-a-way. OK, I'd suggest copying an icon from the pack you could use as a base and

opening it in Inkscape. Then edit to your heart's content and save it as the name of the application that is lacking. Copy it into the pack. It really is that simple.

Q: So I have my sister's laptop from her time in uni and it is an old Intel core I3 2.2ghz and 4gb ram HP and I would like to know if this boy supports the latest ubuntu 22.04LTS, I think?

A: Yes. All of the i-series CPU's are supported, even the core2duo's. You may have to do some BIOS wrangling, (see question above) but it will work.

Q: I installed Ubuntu in Virtualbox, but it is in a mini screen and it won't go fullscreen. I think I may need to install a driver, but the driver app does not find any. It just sits in the middle of my display.

A: You need to install what is called the "guest addons" and you should be golden.

Q: I added Thunderbird v91.12 on my new laptop. The screen size went from 1366x768 to 1920x1080 from the old one, so everything is kinda small. I don't have the best eyes as it is, and when I go to adjust the font sizes in the preferences, nothing seems to happen. Please help?

A: Thunderbird is basically a browser, so the fonts you are adjusting is for the "READING PANE" only. You can change it by changing your system fonts. And Thunderbird and Firefox should look better. You could also adjust the "Density" setting once you have bigger fonts.

Q: I have had to go back to Ubuntu 18.04, as our software does not support any of the newer versions. I just hit one snag, I need bluetooth for my headphones. I have an HP Probook with nothing printed on the bottom cover, so no model number, but it is an i5 with an SSD, so it can't be THAT old. Dmesg <removed>

A: I am not 100% on bluetooth as I have not used it, (no

bluetooth devices). However, I can point you here: <https://net2.com/how-to-set-up-bluetooth-on-ubuntu-18-04/>

Q: So with the stupid woke principles I need to fix all my senior's scripts, since he has left the company. My experience is working in a computer repair shop the last two years, and everything is Linux here. I have to go into each script and replace slave and secondary and sometimes revert them for machines that have not upgraded. <removed>

A: Linux ships with a command line application called sed, a stream editor. Simply type:

```
sed -i 's/setSlaveOK/  
setSecondaryOK/g'
```

man sed if you get stuck or find it on the 'net.



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



Price: \$3.99 USD

Blurb: "Return to the underground classic world of treasures and traps in the HD remake of Crystal Caves! Guide Mylo through puzzles and arcade challenges of your favorite episodes, then explore the whole new Episode loaded with all new puzzles, enemies, challenges, hazards and help Mylo get back home!"

I would like to point out that this is a game from 1991-ish, updated to work on modern displays. It is an excellent game for the young ones, which should keep them busy for ages. (Plus, it won't take up much space on your computer.)

The PC really lacked for nice platform games in the early 90's so Crystal Caves was considered special, but it was outshone by Prehistorik 1 & 2 and never really floated to the top. It was also riding the wave of Commander Keen from Apogee the year before, that was hugely popular. However, I cannot see it become very popular, even now, in HD, but as I mentioned

before, it may keep the kids busy for a fiver. Keep in mind that the original can still be played via DosBox and was free as in "Shareware".

The installation did not go well, I had to try some old versions of Ubuntu to get it installed.

So what are the enhancements over the original? There is a fourth world. There is also music. Not great music, but also not beeps n boops like the original on PC speakers. I think music is key here as the game needs to be passed to

the next generation. If you are a die hard retro fan, you may not like the music, so you can turn it off.

I honestly did not like the original, (Coming off titles in the 80's with soundtracks by the likes of Rob Hubbard / Chris Huelsbeck, it is not hard to see why.) object sizes were waaaay off, for instance, a mine cart would be smaller than you, but a shoe will be your (sprite's) size. This sort of bugged me, as every sprite had to be 16x16 with the odd one larger. Also, because of the limited palette, things would seem to blend into

the coloured background. I will include a screen-shot here where you need to spot the main sprite, so you can have an idea what I am talking about. On this front, nothing has changed. It is still the same palette and the same graphics, with sprites that don't make sense. (Also they were bargain basement sprites compared to other Apogee titles, even compared to 8-bit computer games from the 80's.) Do not hold your breath for a story either, then again, a four year old does not need a story. The game-play is simple enough for any kid, you run, you jump, you shoot and you collect colourful objects. No ducking, sliding, double jumping, etc. There are some puzzle elements in the game, but they are very basic – I suppose the targeted audience is under 10 – but kids know when they are being skimped on.

The big bonus? Crystal Caves now has its own level editor and you can share your creations with friends. If you are not the creative type, so far, the online levels are 50/50, which is to be expected as



UBUNTU GAMES

most "creators" will be under the age of 12. The level editor also ensures that you did not waste your money when it comes to replayability. The opportunity here is you can sit down and teach your kids how and play what you made with them. Who knows, you may discover a hidden talent!

The question is: Should you buy it? My answer is, it depends. If you want a burst of nostalgia or to

amuse the kids, sure. If you wanted some button mashing, nope.

The game is at a leisurely pace and you quickly learn that you cannot shoot forever as, one, the bullets are limited and two, you may hit something vital your sprite needs to live. If you liked matching gems or clicking on playing cards to sort them into stacks, this is right up your alley. Since the original did not do it for me, the HD version

with the music and level editor leaves me with a glass half full and half empty situation. Now here's the kicker, if what we have now was available in 1992, I may have liked it a bit more.

To be thorough, I have to mention that the original is available on GOG for a whole \$0.49 USD, but Windows and Mac only.



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



PATRONS

MONTHLY PATRONS

Alex Crabtree
 Alex Popescu
 Andy Garay
 Bill Berninghausen
 Bob C
 Brian Bogdan
 CBinMV
 Darren
 Dennis Mack
 Devin McPherson
 Doug Bruce
 Elizabeth K. Joseph
 Eric Meddleton
 Gary Campbell
 George Smith
 Henry D Mills
 Hugo Sutherland
 Jack
 Jason D. Moss
 Joao Cantinho Lopes
 John Andrews
 John Malon
 John Prigge
 Jonathan Pienaar
 Joseph Gulizia
 JT
 Kevin O'Brien
 Lee Allen
 Leo Paesen
 Linda P

Mark Shuttleworth
 Moss Bliss
 Norman Phillips
 Oscar Rivera
 Paul Anderson
 Paul Readovin
 Rino Ragucci
 Rob Fitzgerald
 Robin Woodburn
 Roy Milner
 Scott Mack
 Sony Varghese
 Taylor Conroy
 Tom Bell
 Tony
 Vincent Jobard
 Volker Bradley
 William von Hagen

SINGLE DONATIONS

2021:
 Floyd Smith
 Dale Reisfield
 Jan Ågren
 Linda Prinsen
 melvyn smith
 Frits van Leeuwen
 Raymond Mccarthy
 Robert Kaspar
 Frank Dinger
 Ken Maunder

Brian Kelly
 János Horváth
 Ronald Eike
 John Porubek
 Hans van Eekelen
 Kees Moerman
 Jon Loveless
 Jim Hibbard

2022:
 Frits van Leeuwen
 Marcus Carlson
 Louis W Adams Jr
 Linda Prinsen
 James Flanagan
 Peter Horlings
 Patrick Martindale
 Frank Dinger
 János Horváth
 Dan Prizner
 TODD WINTERS

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

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

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

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



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



<https://paypal.me/ronnietucker>



<https://donorbox.org/recurring-monthly-donation>



HOW TO CONTRIBUTE

FULL CIRCLE NEEDS YOU!

A magazine isn't a magazine without articles and Full Circle is no exception. We need your opinions, desktops, stories, how-to's, reviews, and anything else you want to tell your fellow *buntu users. Send your articles to: articles@fullcirclemagazine.org

We are always looking for new articles to include in Full Circle. For help and advice please see the **Official Full Circle Style Guide**: <http://bit.ly/fcmwriting>

Send your **comments** or Linux experiences to: letters@fullcirclemagazine.org
Hardware/software **reviews** should be sent to: reviews@fullcirclemagazine.org
Questions for Q&A should go to: questions@fullcirclemagazine.org
Desktop screens should be emailed to: misc@fullcirclemagazine.org
... or you can visit our **site** via: fullcirclemagazine.org



FCM#185

Deadline:

Sunday 11th Sept. 2022.

Release:

Friday 30th Sept. 2022.



Full Circle Team



Editor - Ronnie Tucker

ronnie@fullcirclemagazine.org

Webmaster -

admin@fullcirclemagazine.org

Editing & Proofreading

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

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

Getting Full Circle Magazine:

For the Full Circle Weekly News:



You can keep up to date with the Weekly News using the RSS feed: <http://fullcirclemagazine.org/feed/podcast>



Or, if you're out and about, you can get the Weekly News via Stitcher Radio (Android/iOS/web):
<http://www.stitcher.com/s?fid=85347&refid=stpr>



and via TuneIn at: <http://tunein.com/radio/Full-Circle-Weekly-News-p855064/>



EPUB Format - Most editions have a link to the epub file on that issue's download page. If you have any problems with the epub file, email: mobile@fullcirclemagazine.org



Issuu - You can read Full Circle online via Issuu: <http://issuu.com/fullcirclemagazine>. Please share and rate FCM as it helps to spread the word about FCM and Ubuntu.

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