REVIEW

UBUNTU 22.10

VanillaOS
A NEW DISTRO ON THE BLOCK

Full Circle

THE INDEPENDENT MAGAZINE FOR THE UBUNTU LINUX COMMUNITY

EDITORIAL

WELCOME TO THE LATEST ISSUE OF FULL CIRCLE

A few things missing this month due to real-life getting in people's way. We do have; Python, Latex, and Inkscape for your perusal. No C&C or Blender as Erik is a bit busy.

We do have that promised review of Ubuntu 22.10 though. Not just Ubuntu 22.10, but also a review of a new kid on the block: VanillaOS 22.10. Adam has cast his critical eye over it. Is it any good? Read on and find out.

Speaking of distro reviews, Adam often uses Ventoy on a USB stick to check distros. There was some back and forth between him and AuntyE (from the French translation team) about a curious quirk. I've printed those emails here as a Ventoy special Letters page.

There was talk of Ubports Touch OTA-24 being released this week, but I think it's been delayed (again). I'm also led to believe that OTA-24 will be the last update for the current 16.04 based Touch and they're hoping to release a Touch based on 20.04 before Christmas. So that's exciting!

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!
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RELEASE OF RSYNC 3.2.7 AND RCLONE:

23/10/2022

Rsync 3.2.7, a utility for synchronizing files and for backup, which allows you to minimize traffic by incrementally copying of changes, has been published. Ssh can be used as a transport, rsh or it's own rsyncprotocol. Anonymous rsync servers, optimally suitable for synchronization of mirrors, is supported. The project code is distributed under the GPLv3 license.

https://www.mail-archive.com/rsync-announce@lists.samba.org/msg00111.html

LINUS TORVALDS PROPOSED TO STOP SUPPORTING THE i486 CPU IN THE LINUX KERNEL:

23/10/2022

During the discussion of the work track on x86 processors, that do not support the "cmpxch8b" instruction (Pentium and later), Linus Torvalds said that it was time to declare the presence of this instruction mandatory for the core and to refuse to support the i486 processors that do not support "cmpxchg8b," instead of trying to emulate the operation of this instruction on processors that no one is using. Currently, almost all Linux distributions, which continue to support 32-bit x86 systems, switched to the kernel build with the X86_PAE option, requiring the support of "cmpxchg8b."

According to Linus, in terms of support in the core, the i486 processors have lost relevance, despite the fact that they are still found in use. At some point, the processors become museum exhibits and for them it is possible to do with "museum" cores. Users who have systems with i486 processors will be able to use LTS-letter cores, which will be accompanied by many years.

The termination of support for the classic i486 will not affect Intel's built-in Quark processors, which, although they belong to the class of the i486, but include additional instructions associated with Pentium generation, including the "cmpxchg8b." The same is true for the Vortex86DX processors. Support for i386 processors was discontinued in the core 10 years ago.

https://lore.kernel.org/lkml/CAHk-=wikUaRM5H_y1Bc+QyvGi40dKDL8fnCTyz7ECbwK7aHNPQ@mail.gmail.com/

RELEASE OF ICEWM 3.1.0:

24/10/2022

The release of the lightweight window manager IceWM 3.1.0 is available. IceWM provides full control through keyboard combinations, the ability to use virtual desktops, taskbar and application menus. The window manager is configured through a fairly simple configuration file and you can use themes. It has built-in applets for monitoring CPU, memory, traffic. Several third-party GUIs are developed for customization, desktop implementations and menu editors. The code is written in C++ and is distributed under the GPLv2 license.

The new version continues to develop the window management mechanism based on tabs. A special indicator was added to the window header, which allows you to judge the presence of tabs and switch between them (previously, switching was carried out using a keyboard combination or menu, and the tabs themselves were not allocated). They added a new parameter, "frame" window for automatic grouping in tabs of application windows with one "frame." Saving tabs bindings after restarting was ensured. The tabs

are displayed in the window list. They also improved the Alt+Tab behavior for windows with tabs.

https://github.com/ice-wm/icewm/releases/tag/3.1.0

FLATPAK 1.15.0 AVAILABLE:
25/10/2022

Among the most outstanding novelties, there are changes regarding the compilation: from now on this type of package can be compiled with Meson instead of Autotools. To do this you need to use Meson 0.53.0 or later and Python 3.5 or later. They say the Autotools build system will probably be removed during the 1.15 or 1.17 cycle.

OTHER FLATPAK 1.15 NEWS

This version allows the system call modify_ldtas part of --alow=multiarch, which increases the attack surface, but is necessary when using 16-bit executable in some versions of WINE. The gssproxy socket can also be shared, which acts as a portal for Kerberos authentication and allows apps to use Kerberos authentication

without a hole in the sandbox. Finally, a httpbackend variable has been added to flatpak.pc, which allows dependent objects such as GNOME software to detect if they are compatible with libflatpak.

https://github.com/flatpak/flatpak/releases/tag/1.15.0

LENNART POTTERING PROPOSES LINUX TRUSTED BOOT:
26/10/2022

Lennart Poettering (systemd) has published a proposal to modernize the process of loading Linux distributions, aimed at solving existing problems and simplifying a full verified download, confirming the reliability of the core and the basic system environment. The changes required for the new architecture are already included in the systemd code base and affect components such as systemd-stub, systemd-measure, systemd-cryptenroll, systemd-cryptsetup, systemd-pcrphase and systemd-creds.

The proposed changes are to create a single universal image of

the UKI (Unified Kernel Image), combining the image of the Linux kernel, the handler to load the kernel from UEFI (UEFI boot stub) and the initrd system environment loaded into memory, used for initial initialization at the stage before the root FS. Instead of the image of an RAM disk in UKI can be packed and the entire system, which allows you to create fully verified system environments, downloaded in RAM. The UKI-image is made in the form of an executable file in PE format, which not only can be loaded with traditional bootloaders, but also directly called from UEFI firmware.

https://0pointer.de/blog/brave-new-trusted-boot-world.html

DISPLAY SERVER - MIR 2.10:
27.10.2022

The release of the display server, Mir 2.10, still developed by Canonical, despite the rejection of the development of the Unity shell. Mir remains in demand in Canonical projects and is now positioned as a solution for embedded devices and the Internet of Things (IoT). Mir can be used as a composite server for Wayland, which allows you to run in

the environments based on Mir any applications using Wayland (for example, assembled with GTK3/4, Qt5/6 or SDL2). Packages for installation are prepared for Ubuntu 20.04, 22.04 and 22.10 (PPA) and Fedora 34, 35, 36 and 37. The project code is distributed under the GPLv2 license.

The new version has modernized the processing of events from touch screens, support for a new screen gesture to move windows (driving with Shift, Alt or Ctrl keys pressed), added the ability to move windows from the deployed state, for the X11 platform, a correct selection of pixel formats has been implemented and scrolling is improved.

https://discourse.ubuntu.com/t/mir-release-2-10-0/31871

EXPERIMENT TO OBTAIN PACKET CONTROL IN THE AUR REPOSITORY:
27.10.2022

The results of the experiment to seize the control of packages in the AUR repository (Arch User Repository), used to distribute

third-party packages of third-party developers without inclusion in the main repository of the Arch Linux distribution, was announced. The researchers have prepared a script that checks the expiry of the registration of domains appearing in the PKGBUILD and SRCINFO files. During the launch of this script, 14 expired domains were identified, used in 20 packages for downloading files.

A simple domain registration is not enough to replace the package, as the downloadable content is checked by the already loaded AUR checks the checksum. However, it turned out that accompanying about 35% of packages in AUR use the "SKIP" parameter in the PKGBUILD file to skip check the checksum (for example, the sha256sums are indicated). Of the 20 packages with expired domains,

the SKIP parameter was used in 4.

To demonstrate the possibility of an attack, the researchers bought the domain of one of the packages that do not checksum, and placed an archive with code and a modified installation script on it. Instead of the actual content, the display of a third-party code warning was added to the script. The attempt to install the package led to the download of the substituted files and, since the checksum was not checked, to the successful installation and launch of the code added by the experimenters.

https://blog.nietaanraken.nl/posts/aur-packages-expired-domains/

RELEASE OF TOARUOS 2.1:
27.10.2022

The Unix-like operating system ToaruOS 2.1, written from scratch and supplied with its core, loader, standard C-library, packet manager, user space components and graphical interface with a composite window manager, was announced. The project was originally developed at the University of Illinois as research work in the field of creating new composite graphic interfaces, but then transformed into a separate operating system. The project code is written in the C language and distributed under the BSD license. For download there is a live image, size 14.4 MB, which can be tested in QEMU, VMware or VirtualBox

ToaruOS is based on a kernel using a hybrid modular architecture

that combines a monolithic base and tools for the use of downloadable modules, which formalize most of the existing device drivers, such as disk drivers (PATA and ATAPI), EXT2 and ISO9660, framebuffer, keyboards, mouse and network cards (AMD PCnet FAST, Realtek RTL8139 and Intel's Complemented The core supports Unix-streams, TTY, virtual FS, pseudo-FS /proc, multithreading, IPC, ramdisk, ptrace, shared memory, multitasking and other typical features).

https://github.com/klange/toaruos/releases/tag/v2.1.0

FEDORA 37 DELAYED FOR TWO WEEKS DUE TO CRITICAL VULNERABILITY IN OPENSSL:
28.10.2022

The developers of the Fedora project announced the postponement of the release of Fedora 37 to November 15 due to the need to eliminate critical vulnerability in the OpenSSL library. Since the data on the nature of the

vulnerability will be disclosed only on November 1 and it is not clear how long it will take to implement the protection in the distribution, they decided to postpone the release for 2 weeks. This is not the first postponement - initially the release of Fedora 37 was expected on October 18, but was postponed twice (on October 25 and November 1) due to failure to comply with quality criteria.

The vulnerability is classified as critical, details have not yet been reported, but the level of danger is close to the sensational vulnerability of Heartbleed. The critical level of danger implies the possibility of a remote attack on typical configurations. Critical can be attributed to remote leaks of server memory, execution of code or the attacking/compromising server keys. The fix of OpenSSL 3.0.7 with the elimination of the problem and information on the nature of the vulnerability will be published on November 1.

https://www.mail-archive.com/devel-announce@lists.fedoraproject.org/msg02909.html

THE openSUSE DISTRIBUTION PROPOSES TO TEST A NEW INSTALLER:
28.10.2022

The developers of the openSUSE project asked users to take part in the testing of the new installer D-Installer. Installation images are prepared for x86_64 (598MB) and Aarch64/ARM64 (614MB) architectures. The uploaded image allows you to install three platforms: a stable release of openSUSE Leap 15.4, the continuously updated openSUSE Tumbleweed build and the Leap Micro 5.2, based on isolated containers (for x86_64 only). In the future, the plan is, the new installer is to be used in products based on the ALP (Adaptable Linux Platform), which replaces SUSE Linux Enterprise.

Among the goals of the development of D-Installer, they mention the elimination of existing restrictions of the graphical interface, the expansion of opportunities for using the functionality of YaST in other applications, the departure from the link to one programming language (D-Bus API will create add-ons in different languages) and stimulate the creation of alternative settings by community representatives.

https://news.opensuse.org/2022/10/27/call-for-testing-next-gen-installer/

EPIPHANY (GNOME WEB) TRANSLATED TO GTK4:
28.10.2022

The main branch of the web-browser Epiphany, developed by the GNOME project, based on the WebKitGTK engine and offered to users under the name GNOME Web, added support for the GTK4 library. The Epiphany interface is close to the modern requirements for the GNOME application style, for example, the textured selection of buttons in the panel has been discontinued, the design of the tabs has been changed, the corners of the window are more rounded. Test builds based on GTK4 and available at the gnome-nightly flatpak repository. In stable releases, the GTK4 port will be part of GNOME 44.

https://gitlab.gnome.org/GNOME/epiphany

OpenVPN 2.5.8 RELEASE:
29.10.2022

OpenVPN 2.5.8, a package for creating virtual private networks, is out, allowing you to create an encrypted connection between the two client machines or provide a centralized VPN server for the simultaneous operation of several clients. The OpenVPN code is distributed under the GPLv2 license, ready-to-use binary packages are built for Debian, Ubuntu, CentOS, RHEL and Windows.

The new version provides the ability to run the default configuration with TLS-libraries that do not have support BF-CBC (Blowfish in CBC mode). For example, Blowfish is not supported in the OpenSSL 3.0 library, the initial support is transferred from the OpenVPN 2.6 branch. Previously, the presence of BF-CBC in the list of default-supported ciphers led to an error, even if BF-CBC was not used in the connection. In addition to fixing errors in the new version, there is

also an extension for a test set and the addition of the git-brain name and the commit identifier in the line with the OpenVPN version in the builds for Windows.

https://github.com/OpenVPN/openvpn/releases/tag/v2.5.8

RELEASE OF ZORIN OS 16.2:

29.10.2022

Zorin OS 16.2, based on Ubuntu 20.04, is available for download. The target audience of this distribution are novice users, accustomed to working in Windows. The distribution offers a special configurator that allows you to change the desktop a view, similar to different versions of Windows and macOS, and includes a selection of programs close to programs that Windows users are accustomed to. To integrate the desktop with a smartphone, the Zorin Connect application (based on KDE Connect) is available. In addition to Ubuntu repositories, the default way for installing programs from the Flathub and Snap Store directories is enabled. The size of the bootable iso-image

is 2.7 GB (four builds are available - one based on GNOME, "Lite" with Xfce and their options for educational institutions).

https://blog.zorin.com/2022/10/27/zorin-os-16.2-has-landed/

RELEASE OF GNU MAKE 4.4:

31/10/2022

After almost three years of development, the GNU Make 4.4 assembly system was released. In addition to correcting errors, the new version included quite a few changes, chief among them was removing outdated platforms, like OS/2/2 (EMX), AmigaOS, Xenix and Cray, who's support of which will be discontinued in the next release.

https://lists.gnu.org/archive/html/help-make/2022-10/msg00020.html

HAIKU IMPLEMENTED A LAYER FOR COMPATIBILITY WITH WAYLAND:

31/10/2022

Haiku operating system, who continues to develop the ideas of BeOS added a layer to ensure compatibility with Wayland, allowing you to run toolkits and applications that use this protocol, including applications based on the GTK library. The interlayer was developed by Ilya Chugin, who is also engaged in the Haiku port for the RISC-V architecture and the adaptation of Wine for Haiku.

The layer provides the libwayland-client.so library, based on libwayland code and compatible at API and ABI, which allows you to run the Wayland applications unchanged. Unlike Wayland's typical composite servers, the layer is not running in the form of a separate server process, but is loaded as a plugin to client processes. Instead of sockets, the server uses a native messaging cycle based on Blooper.

Previously, another Haiku developer had already prepared an initial implementation of the layer

to ensure compatibility with the Xlib library, which allows you to run the X11 applications in Haiku without using an X-server. The layer is implemented through the emulation of Xlib functions by streaming calls to the high-level Haiku graphical API.

https://discuss.haiku-os.org/t/my-progress-in-wayland-compatibility-layer/12373

RELEASE OF OBS STUDIO 28.1:

01/11/2022

OBS Studio 28.1, a package for streaming, compositing and video recording, is out. The code is written in C/C++ and is distributed under the GPLv2 license. The builds provided are for Linux, Windows and macOS.

The purpose of the development of OBS Studio was to create a portable version of the Open Broadcaster Software (OBS Classic) application, not tied to the Windows platform, which supports OpenGL and is extensible through plugins. The difference is also the use of modular architecture, which

involves the separation of the interface and the core of the program. It supports transcoding of original streams, video capture during games and streaming in PeerTube, Twitch, Facebook Gaming, YouTube, DailyMotion, Hitbox and other services. To ensure high performance, hardware acceleration mechanisms (e.g., NVENC and VAAPI) can be used.

Support is provided for compositing with the construction of the scene based on arbitrary video streams, data from web cameras, video capture maps, images, text content of applications or the entire screen. In the process of broadcasting, it is allowed to switch between several predefined scenes. The program also provides tools for mixing sound, filtering with VST plugins, leveling volume and noise suppression.

https://github.com/obsproject/obs-studio/releases/tag/28.1.0

RELEASE OF SUPERTUXKART 1.4:
01/11/2022

After a year of development, the release of Supertuxkart 1.4, a free racing game, with a large number of maps, tracks and opportunities, was published. The game code is distributed under the GPLv3 license. Binary builds are available for Linux, Android, Windows and macOS.

https://blog.supertuxkart.net/2022/11/supertuxkart-14-release.html

RELEASE OF THE NITRUX 2.5 DISTRIBUTION WITH NX DESKTOP:
01/11/2022

Nitrux 2.5.0, built on Debian, KDE technologies and the OpenRC initialization system, has been published. The project offers its own desktop NX Desktop, which is an add-on over the user environment of KDE Plasma. Based on the Maui library for the distribution, a set of typical user applications was developed, which can be used on both desktop and mobile devices. AppImages are being promoted to install additional applications. The size of the image is 1 GB. The project is distributed under free licenses.

The NX Desktop desktop offers a different style design, its own implementation of the system tray, notification output center and various plasmoids, like a network connector and multimedia applet to control the volume and control the playback of multimedia content. Applications are created using the MauiKit framework, noteworthy apps - the file manager Index (you can also use Dolphin), text editor Note, Station terminal emulator, VVave music player, Clip video player, NX Software Center application center and Pix image viewer.

https://nxos.org/changelog/release-announcement-nitrux-2-5-0/

RELEASE OF TRUENAS CORE 13.0-U3:
02/11/2022

The release of TrueNAS CORE 13.0-U3, a distribution for fast deployment of Network-Attached Storage (NAS), which continues the development of the FreeNAS project, is available. TrueNAS CORE 13 is based on the FreeBSD 13 codebase, it features integrated support for ZFS and the ability to manage it through a web interface built using Python and the Django framework. FTP, NFS, Samba, AFP, rsync and iSCSI are supported to provide storage access, software RAID (0.1.5) it can be used to authorize clients with LDAP/Active Directory support. Io-image size is 990MB (x86_64).

https://www.truenas.com/blog/truenas-13-0-u3-increases-maturity-and-includes-ix-storj-service/

NPM INCLUDES MANDATORY TWO-FACTOR AUTHENTICATION FOR ACCOMPANYING MAJOR PACKAGES:

02/11/2022

GitHub has expanded the use of mandatory two-factor authentication in the NPM repository, which will now apply to developer accounts accompanying packages of more than 1 million downloads per week or used as a dependency in more than 500 pakages. Previously, two-factor authentication was mandatory only for accompanying the 500 most popular NPM-packages (according to the number of dependent packages).

Major packages will now be able to perform changes related to the repository operation only after the two-factor authentication, that requires one-time passwords (OTP) generated by applications such as Authy, Google Authenticator and FreeOTP, or hardware keys and biometric scanners that support the WebAuth protocol.

https://github.blog/changelog/2022-11-01-high-impact-package-maintainers-now-require-2fa/

NEW 9FRONT, OFFSHOOT OF PLAN 9 OPERATING SYSTEM:

03/11/2022

A new release of the 9front project is available, in which the community has been developing a type of fork operating system Plan 9 independent of Bell Labs since 2011. Ready-made installation builds for i386, x86_64 architectures and Raspberry Pi 1-4 boards, are available to play with. The project code is distributed under the Lucent Public License based on the IBM Public License, but differs from the requirement of publishing source code for derivative works.

The new version provides support for full operation on the MNT Reform laptop, including support for graphics, sound, Ethernet, USB, PCIe, trackball, SD card and NVMe. The MNT Reform does not yet have a built-in Wi-Fi, instead they recommended you use an external wireless adapter. The system implements new taskbar programs (plate display, for example, for output of the battery charge indicator, date and time), ktrans (performs input transliteration), riow (hotkey manager) and doom (doom game).

The basic idea of Plan 9 is to erase the differences between local and remote resources. The system is a distributed environment based on three basic principles: all resources can be considered as a hierarchical set of files; there is no difference in access to local and external resources; each process has its own variable name space. The 9P protocol is used to create a single distributed hierarchy of file resources.

http://9front.org/releases/2022/10/31/0/

NEW RELEASE OF WARZONE 2100:

03/11/2022

After eight months of development, the release of the strategic (RTS) game Warzone 2100 4.3 is ready for download. The game was originally developed by Pumpkin Studios and released on the market in 1999. In 2004, the source code was opened under the GPLv2 license and the game continued to be developed by the community. Both single-player against bots and network games are supported. Packages are prepared for Ubuntu, Windows and macOS.

https://wz2100.net/news/version-4-3-1/

ROSA FRESH 12.3:

04/11/2022

The company STC IT ROSA has released a corrective release of ROSA Fresh 12.3, built on the platform rosa2021.1. Free builds designed for the x86_64 platform in versions with KDE Plasma 5, LXQt, GNOME, Xfce and without GUI is available. Users who have already installed the ROSA Fresh R12 distribution will receive an update automatically.

The release is notable for the fact that, in addition to the previous images with KDE 5, GNOME and LXQt, images with Xfce and a minimalist server image - the first server distribution on the

NEWS

ROSA Fresh packet database were released. The server build includes only the minimum necessary for easy operation and from the repository you can install the necessary packages, including, for example, FreeIPA and the Russian fork nginx Angie with additional modules.

http://wiki.rosalab.ru/ru/index.php/ROSA_Fresh_12.3

LENNART POTTERING PROPOSED TO MODERNIZE LOADING:

04/11/2022

Lennart Pottering continued to publish ideas on the processing of components for Linux loading and considered the situation with duplication of loading sections. Lennart suggested that you use only one boot partition and on EFI systems by default to place images with the kernel and initrd in the VFAT section /efi. On systems without EFI or if the EFI partition already exists during installation (when another OS is used in parallel) and there is not enough free space in it, you can use a separate /boot section with the

XBOOTLDR type (section /efi in the partition table has an ESP type). Sections ESP and XBOOTLDR are proposed to be created in separate directories (separate mount /efi and /boot instead of nested mount /boot/efi), make them definite and auto-mounted through identification type XBOOTLDR in the partition table (without prescripting partitioning in /etc/fstab).

The /boot section will be common to all Linux distributions installed on the computer, and the separation of files specific to distributions will be carried out at the subdirectories level (for each installed distribution distribution, your subdirector). In accordance with the established practice and requirements of the UEFI specification, only the VFAT file system is used in the section with EFI components. To unify and rid the loader of the loader from complications associated with the support of different FS, it is proposed to use VFAT as a file system for the /boot partition, which will greatly simplify the implementation of components that access data in the /boot and /efi sections running on the boot side. Unification will allow you to

equally support both sections (/boot and /efi) to load kernel images and initrd.

https://0pointer.net/blog/linux-boot-partitions.html

RELEASE OF THE GNU TALER 0.9 PAYMENT SYSTEM DEVELOPED BY THE GNU PROJECT:

04/11/2022

After a year of development, the free electronic payment system GNU Taler 0.9, which provides anonymity to buyers, but retains the ability to identify sellers to ensure transparency in the provision of tax reports, was released. The system does not allow you to track information about where the user spends money, but provides funds to track the receipt of funds (the sender remains anonymous), which solves the problems with the tax audit inherent in BitCoin. The code is written in Python and is licensed under AGPLv3 and LGPLv3 licenses.

GNU Taler does not create its own cryptocurrency, but works with

existing currencies, including dollars, euros and bitcoins. Support for new currencies can be ensured through the creation of a bank that acts as a financial guarantor. The GNU Taler business model is based on the execution of exchange operations - money from traditional payment systems such as BitCoin, Mastercard, SEPA, Visa, ACH and SWIFT are converted into anonymous electronic money in the same currency. The user can transfer electronic money to the sellers, who can then change them back to the real money presented by traditional payment systems at the exchange point.

All transactions in GNU Taler are protected using modern cryptographic algorithms that allow you to maintain reliability even when leaking private keys of customers, sellers and exchange points. The OBD format provides the ability to verify all transactions and confirm their consistency. Confirmation of payment for sellers is the cryptographic proof of the transfer within the framework of the contract concluded with the client and cryptographically signed confirmation of the availability of funds at the point of exchange. The GNU Taler includes a set of basic

components that provide logic for the bank's work, exchange points, trading platform, wallet and auditor

https://www.mail-archive.com/info-gnu@gnu.org/msg03107.html

LXQt 1.2:
05/11/2022

Available now is the user environment, LXQt 1.2 (QCT Lightweight Desktop Environment), developed by the combined teams of developers from LXDE and Razor-qt. The LXQt interface continues to follow the ideas of the classical desktop layout, bringing modern design and techniques that increase the usability. LXQt is positioned as a lightweight, modular, fast and convenient continuation of the development of Razor-qt and LXDE desktops, which combine the best features of both shells. The code is placed on GitHub and falls under GPL 2.0+ and LGPL 2.1+ licenses. Ready-made builds are expected for Ubuntu (LXQt is offered by default in Lubuntu), Arch Linux, Fedora, openSUSE, Mageia, FreeBSD, ROSA and ALT Linux.

https://lxqt-project.org/release/2022/11/05/release-1.2-0/

RELEASE OF TRINITY R14.0.13:
06/11/2022

TDE is a free/libre lightweight desktop environment intended for computer users preferring a lean and efficient experience. It is available for various Linux distros and BSD

Low on system requirements, it is also an ideal choice for dated hardware, while still providing a fully usable desktop.

Born from the ashes of KDE 3.5.10 in 2010, TDE is a fully independent project with its own personality, community and development team.

This release comes with fixes for both CVE-2020-12755 (FISH protocol) and KMail's EFAIL vulnerabilities.

It adds Markdown support in Kate, a new window style, a new tdeioslave protocol to gather application information (tdeio-appinfo), several improvements to GUI interaction and a new SFTP tdeioslave based on libssh.

It also solves the issue with opening files from media:/ and system:/media/ URLs from non-TDE applications and is compatible with OpenSSL 3.0 API.

https://www.trinitydesktop.org/newsentry.php?entry=2022.10.30

PUBLICATION OF PORTMASTER 1.0:
06/11/2022

Portmaster 1.0, an application firewall, which provides access control and traffic tracking at the level of individual programs and services has been released. The project code is written in Go and distributed under the AGPLv3 license. The interface is implemented on JavaScript using the Electron platform. It works in Linux and Windows.

Portmaster uses iptables and nfqueue to inspect and control network traffic. The nfqueue allows packets to be handed over to user space and return a verdict and set a mark on that connection.

Portmaster accepts all packets, but marks the whole connection to be accepted/dropped afterwards. This relieves Portmaster of heavy network traffic because once the fate of connection is decided, it is handed back to the kernel, never to be handed to userspace again, which is quite costly. Linux uses iptables and nfqueue to remove the processing of locking solutions into the user's space for inspection and management. In the future, they plan to use a separate module of the kernel for Linux. For trouble-free work, they recommend you use versions of the Linux 5.7 kernel and newer (theoretically, it is possible to work on the kernels starting from the 2.4 branch, but in versions up to 5.7 there are problems). Windows uses its own kernel module to filter traffic.

https://docs.safing.io/portmaster/architecture/os-integration#linux

NEWS

MICROSOFT HAS PUBLISHED AN UPDATE OF CBL-MARINER:

08/11/2022

Microsoft has published an update to the CBL-Mariner 2.0.20221029 (Common Base Linux Mariner). They are developing as a universal base platform for Linux environments used in cloud infrastructure, edge systems and various Microsoft services. The project is aimed at unifying the Linux solutions used in Microsoft and simplifying the maintenance of Linux systems for various purposes in the current state. The project is distributed under the MIT license. Packages are formed for aarch64 and x86_64 architectures. The ISO bootable is prepared (1.1 GB) for x86_64 architecture.

https://github.com/microsoft/CBL-Mariner/releases/tag/2.0.20221029-2.0

YUZU PROJECT DEVELOPS AN OPEN EMULATOR OF THE NINTENDO SWITCH:

08/11/2022

The update of the Yuzu project with the implementation of the Nintendo Switch game console emulnerator, capable of running commercial games supplied for this platform, is presented. The project was founded by the developers of Citra, the Nintendo 3DS prefix emulator. Development is carried out by reverse engineering equipment and firmware of the Nintendo Switch. The Yuzu code is written in C++ and distributed under the GPLv3 license. Ready-made builds are prepared for Linux (flatpak) and Windows.

Yuzu emulates only the equipment, the original firmware dump to the Nintendo Switch, the dump of games with cartridges and the keys to decrypt the game files, which can be obtained by downloading the prefix in RCM mode with the external loader Hekate. Full emulation of the console requires a CPU with SIMD support for FMA and 6 or more cores/flows (at minimum an Intel Core i5-4430 and AMD Ryzen 3, and they recommend - an Intel Core i5-10400 or AMD Ryzen 5 3600), 8 GB RAM and graphics card with support for graphical API OpenGL 4.6 or Vulkan 1, MJD 2GB 2GB300 8GB, AMD Radeon R5.

https://yuzu-emu.org/entry/yuzu-progress-report-oct-2022/

GNU TEXINFO 7.0:

08/11/2022

The release of the free documentation system, GNU Texinfo 7.0, originally developed by Richard Stallman and used for the preparation of documentation for GNU projects, is presented. GNU Texinfo defines a special markup format for documentation and allows you to convert the source document into various formats for publication and printing, for example, PDF, HTML, DVI, Info, DocBook, XML, etc.

The new release significantly expanded the capabilities of the texi2any utility, in which problems with encodings are solved, The options "---latex" and "--epub3" for the output in LaTeX and EPUB 3 formats have been significantly

expanded, support for HTML output is significantly improved. They added new commands ?latex, ?iflatex, ?ifnotlatex for LaTeX format output. The info utility has improved support for entries in the index containing brackets, and they improved the selection of text when displaying man-pages in bold.

https://lists.gnu.org/archive/html/bug-texinfo/2022-11/msg00036.html

NVIDIA HAS RELEASED AN OPEN ENGINE FOR PHYSX 5:
08/11/2022

After almost four years since the last branch, NVIDIA published the source code of the PhysX 5 physical process simulation engine, which was the second major release after the project was declared open. The project code is distributed under the BSD license and supports Linux, macOS, iOS, Windows and Android platforms. In addition to the BSD license, the code and associated PhysX SDK tools are also opened under the BSD license. PhysX is one of the most popular physics engines that are used to handle physical interactions in more than 500 games and is part of many popular gaming engines, including Unreal Engine, Unity3D, AnvilNext, Stingray, Dunia 2 and REDengine.

NVIDIA expects that after the project is made open, they will be able to go beyond the tools for game development and will become in demand in areas such as the synthesis of data for research in the field of artificial intelligence and for training neural networks, the creation of realistic environments for training robots, the simulated conditions in the process of running autonomous vehicles and autopilots. It is also expected that the adaptation of the engine for high-performance cluster systems will achieve a new level of detail and accuracy of simulation of physical processes.

https://developer.nvidia.com/blog/open-source-simulation-expands-with-nvidia-physx-5-release/

RELEASE OF CLONEZILLA LIVE 3.0.2:
08/11/2022

The release of the Linux distribution "Clonezilla Live" v3.0.2, designed for fast cloning disks (copying only the units used), was announced. The tasks performed by the distribution are similar to the proprietary product Norton Ghost. The size of the iso-image of the distribution is 363 MB (i686, amd64).

The distribution is based on Debian GNU/Linux and uses the code of projects such as DRBL, Partition Image, ntfsclone, partclone, udpcast. It is possible to download and work from CD/DVD, USB Flash and via the network (PXE). Supported formats include: LVM2 and FS ext2, ext3, ext4, reiserfs, reiserfs, reiser4, xfs, jfs, btrfs, f2fs, nilfs2, FAT12, FAT16, FAT32, NTFS, HFS+, UFS, minix, VMFS3 and VMFS5 (VMWH ESX). There is a mode for mass cloning over a network, including the transfer of traffic in a multicast mode, which allows you to clone the original disk on a large number of client machines at the same time. You can clone from one disk to another, and creating backups by saving the disk image to the file. You can also clone an entire disk or individual partitions.

https://sourceforge.net/p/clonezilla/news/2022/11/stable-clonezilla-live-302-21-released/

RELEASE OF PHOSH 0.22:
09/11/2022

The Phosh 0.22.0, mobile-based screen shell based on GNOME technology and the GTK library, was released. The environment was originally developed by Purism as an analogue of GNOME Shell for the Librem 5 smartphone, but then became one of the unofficial GNOME projects and is now also used in postmarketOS, Mobian, some firmware for Pine64 and Fedora editorial devices for smartphones. Phosh uses a Phoc composite server running on top of Wayland, as well as its own squeekboard keyboard. The project is distributed under the GPLv3+ license.

https://social.librem.one/@agx/109303752788802026

SOURCE CODE OF theRADIOSS ENGINEERING PACKAGE:

09/11/2022

Altair, as part of the OpenRADIOSS project, has opened the source codes of the RADIOSS package, which is an analogue of LS-DYNA and is designed to solve the problems of continuous media mechanics, such as the strength of engineering structures in highly linear tasks associated with large plastic deformities of the environment under study. The code is mostly written in Fortran and opened under the AGPLv3 license. It works in Linux and Windows.

TAltair Radioss is an industry-proven analysis solution that helps users evaluate and optimize product performance for highly nonlinear problems under dynamic loadings. For more than 30 years, organizations have used Altair Radioss to streamline and optimize the digital design process, replace costly physical tests with quick and efficient simulation, and speed up design optimization iterations – all so users and organizations can improve product quality, reduce costs, and shorten development cycles.

https://github.com/OpenRadioss/OpenRadioss

MICROSOFT HAS PUBLISHED AN OPEN .NET 7:

10/11/2022

Microsoft has unveiled a major release of the .NET 7 open platform, created thanks to the unification of .NET Framework, .NET Core and Mono products. With .NET 7, you can create multi-platform applications for browsers, cloud systems, desktop, IoT devices and mobile platforms, using a single library and a common build process that does not depend on the type of application. .NET SDK 7, .NET Runtime 7 and ASP.NET Core Runtime 7 are formed for Linux, macOS and Windows. .NET Desktop Runtime 6 is only available for Windows. The project-related developments are distributed under the MIT license. The .NET 7 branch will be supported for 18 months until 14 May 2024.

https://devblogs.microsoft.com/dotnet/announcing-dotnet-7/

RELEASE OF RED HAT ENTERPRISE LINUX 8.7:

11/11/2022

Red Hat has released Red Hat Enterprise Linux 8.7. Installation builds are prepared for x86_64, s390x (IBM System z), ppc64le and Aarch64 architectures, but are available for download only to registered Red Hat Customer Portal users. The original code of the red Hat Enterprise Linux 8 rpm packages are distributed through the Git repository of CentOS. The 8.x branch is accompanied in parallel with the RHEL 9.x and will be maintained until at least 2029.

Preparation of new releases is carried out in accordance with the development cycle, implying the formation of releases every six months at a predetermined time. Until 2024, the 8.x branch will be at the full support stage, implying the inclusion of functional improvements, after which it will go to the support stage, where priorities will shift to bug-fixes and security, with minor improvements related to the support of important hardware systems.

https://access.redhat.com/announcements/6983803

WA-TUNNEL FOR TUNNELING TRAFFIC THROUGH WHATSAPP MESSENGER:

12/11/2022

The Wa-tunnel toolkit has been published, which allows you to pass TCP traffic through another host, using a tunnel running on top of the WhatsApp messenger. Such manipulations can be useful if you need to gain access to the external network from the environments in which only the messenger is available, or to save traffic when connecting to networks or providers providing unlimited options for instant traffic (for example, unlimited access to WhatsApp is provided in the onboard networks of aircraft of some airlines). The code is written in JavaScript using Node.js and is distributed under the MIT license. The Baileys library is used to interact with the WhatsApp API.

The tunnel requires two accounts in WhatsApp - one is used on the client side, and the other on the server side. It sends TCP network packages through WhatsApp text and file messages, depending on the amount of characters it splits them into different text messages or files. To not get timed out by WhatsApp by default it's limited at 20k characters per message, at the moment it's hardcoded in wasocket.js.

https://github.com/aleixrodriala/wa-tunnel

UPDATING THE OPEN AUDIO CODEC LYRA 1.3:

12/11/2022

Google has published the release of the Lyra 1.3 audio codec, aimed at achieving a high quality of voice transmission in a limited amount of information transmitted. The quality of speech on bitrates of 3.2 kbps, 6 kbps and 9.2 kbps, when using the Lyra codec roughly corresponds to the 10 kbps, 13 kbps and 14 kbps codecs when using the Opus codec. To accomplish this, in addition to the usual methods of sound compression and signal conversion, Lyra uses a speech model based on the machine learning system, which allows you to recreate the missing information based on the standard speech characteristics. The reference implementation of the code is written in C++ and is distributed under the Apache 2.0 license.

Unlike the radically redesigned Lyra 1.2 issue of October, which was transferred to a new neural network architecture, version 1.3 optimizes the machine learning model without architectural changes. In the new version for storing weights and performing arithmetic operations instead of 32-bit floating point numbers, it involves 8-bit integers, which led to a 43% reduction in the model and acceleration of the model by 20% when tested on a Pixel 6 Pro smartphone. The quality of speech at the same time managed to maintain at the same level, but the format of the transmitted data has changed and is not compatible with the previous releases.

https://github.com/google/lyra/releases/tag/v1.3.0

RELEASE OF MPV 0.35:

12/11/2022

The release of an open video player MPV 0.35 was announced, which was in response to the code base of the MPlayer2 project in 2013. The MPV focuses on developing new features and ensuring the constant transfer of innovations from MPlayer repositories, without worrying about maintaining compatibility with MPlayer. The MPV code is distributed under the LGPLv2.1+ license, some parts remain under the GPLv2, but the LGPL transition process is almost complete and the option "-enable-lgpl" can be used to disconnect the remaining GPL code.

https://github.com/mpv-player/mpv/releases/tag/v0.35.0

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

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=1600253699&s=books&sr=1-1

Kobo:
https://www.kobo.com/us/en/ebook/the-virtualbox-networking-primer

BACK NEXT MONTH

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.

Back in Full Circle # 171 (July 2021), we looked at Plotext, a Python package that plots directly to a terminal. Over the past 16 months, much has changed in Plotext. It has gone from version 4.1.1 to 5.2.8, and while there are many internal code changes, there is also some new functionality. Their repository page is located at https://github.com/piccolomo/plotext.

Of course, as always, you need to install and/or upgrade the package using pip.

```
pip3 install --upgrade plotext
```

Once you have done this, you can start trying it out using Python in a terminal.
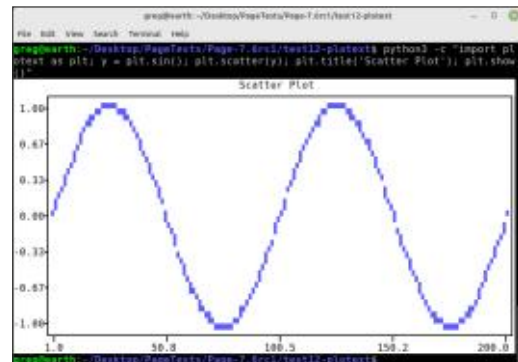
If, on the other hand, you want to write the program, it would look something like that shown top right.

Besides the scatter plot, there are line plots, log plots, stem plots, plots with multiple data sets and multiple axes, vertical bar plots, horizontal bar plots, multiple bar plots, stacked bar plots, histogram plots, datetime plots and candlestick plots – all without the need of using matplotlib.
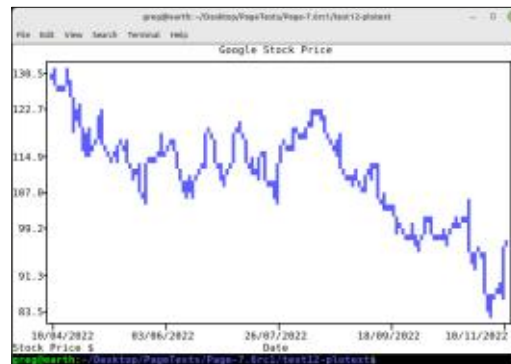
When I originally found Plotext, I was interested in using the package to display plots within a Tkinter program using a standard widget like a Tk Label widget. It took a while, but digging through the

```
import plotext as plt
y = plt.sin() # sinusoidal test signal
plt.scatter(y)
plt.title("Scatter Plot") # to apply a title
plt.show() # to finally plot
```

online documentation and the source code, I was able to find a way by saving the plot to a file, then reading it in as text into the label object. The biggest problem that I had was that the size of the plot was based strictly on the size of the terminal when you ran the plot. Things didn't always line up, especially when you were running the program within an IDE.

I contacted the author, and happily, he was able to provide a fix which ended up in version 4.1.1.

So I was very interested in the new version. When I tried to run the

new version, there was an issue that caused the plot to be displayed as a mess.
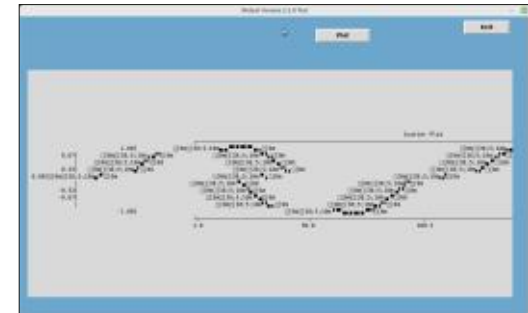
I contacted the author again, this time on a Sunday morning, and within 30 minutes, I was provided a work-around that required only a one-line change. There were a few small things that also needed to be rearranged a bit, but in the end, the process was very similar to the 4.1.1 version.

Take, for example, the code to produce a simple sine wave and display it in a Tk Label widget.

HOWTO - PYTHON

Shown top right, line 1 is the plotext command to create the plot with whichever marker the user has selected. Next, we tell the library not to limit the plot to the size of the terminal. There are two boolean values, one for the x dimensions and one for the y. We then tell the library the size we want the plot to be, and then clear the color data (plt.clc()). Finally, we get to the workaround – which is to build the plot in the uncolorized mode – and assign it to an object which is finally sent to the Label widget via the textvar parameter.

Of course, some of the plots are more complicated, so the first line becomes multiple lines, but the last five lines are the same for every type of standard plot.

There are two new plot types available or greatly upgraded since the first version that I tried, image plots and video plots. Image plots take an image in .jpg format (and I believe others as well), and display it directly into a terminal window. Their sample code is shown bottom right.

Which downloads, displays then deletes a .jpg image in the terminal.

Which admittedly, doesn't do a great job with the default settings, but when set properly, will give you something like this.

You can also use it (with a few changes to the code) to view animated GIF images and to view youtube videos or .mp4 videos.

While I'm not really sure why one would want to do these things,


```
plt.plot(plt.sin(), marker=selected)
plt.limitsize(False, False)
plt.plotsize(125, 26)
plt.clc()
canv = plt.uncolorize(plt.build())
_w1.PlotData.set(canv)
```

```
import plotext as plt
path = 'cat.jpg'
plt.download(plt.test_image_url, path)
plt.image_plot(path)
plt.title("A very Cute Cat")
plt.show()
plt.delete_file(path)
```

it does show the power of the Plotext library.

The bottom line is that Plotext is a great add-on library for Python, and if you need to do light-weight plotting either in a terminal or to a Tkinter GUI, you can't do better!

Until next time, as always; stay safe, healthy, positive and creative!

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 .

BACK NEXT MONTH

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.

This time, in the tour of the many features of Tex / Latex, I am going to explore headers and footers. It is important you are clear what these two words mean. People often confuse headers with headings and confuse footers with footnotes:

Headers are small bits of text that appear at the top, the head, of each page.

Footers are small bits of text that appear at the bottom, the foot, of each page.

Headers are often a shortened form of the article title or the chapter title in a book. Sometimes headers contain page numbering. More often, footers contain page numbering. In magazines and journals, the title of the publication and the publication date usually appear in either the header or the footer.

Headers and footers contain information that is usually independent of the body, the text of the document. For example, in a magazine, like Full Circle Magazine, the title of the magazine and the date of publication is the same no matter what the article is about.

Headings are short bits of text that are almost always set in larger sized type than the rest of the document. The text of a heading should be related to the body text that follows it. Footnotes used to be used for bibliographic references. That practice has been replaced in many publications by the use of endnotes or in-text citations. (Millions of students around the world are thankful for this change.) Footnotes are directly related to the body of the document, either pointing to external sources or describing alternative explanations to something in the body. We will look at footnotes and endnotes another time.

Headers and footers are published outside the ordinary margins of the page. For example, in LibreOffice I set top and bottom margins of my documents to 2.5cm. If I use a header and/or footer, it will appear within that 2.5cm of space either at the top or bottom of the page. A piece of paper that is standard North American letter size is 27.94cm on its long dimension and 21.59cm on its short dimension. If I print in Portrait mode my text will appear in the 22.94cm in the middle of each page, with 2.5cm reserved both at the top and the bottom of each sheet. If I print in Landscape mode the same 2.5cm is reserved top and bottom so the text will appear in the central 16.59cm.

That is in LibreOffice. What about in Tex/Latex documents? The space allocated to headers and footers in Latex documents is determined when the document type is set. Each document type has specific formatting which includes margins, font size, and many other settings. Those settings can be modified using various packages as we have seen before in this series. Those settings can also be modified by editing the settings directly in the default packages for articles, books, etc. Until you get a lot of experience with Latex, it is best to use one or more of the existing packages to get your documents to look how you want them. Remember many journals and other publications have developed their own "style sheets" for Tex/Latex. You should use whichever is appropriate rather than trying to develop your own.

Before we start looking at the possibilities of headers and footers, there are two additions to be made to a document's preamble. fancyhdr must be included and the instruction pagestyle{fancy} must also be present. So the preamble should look something like this:

```
\documentclass[letterpaper,11pt]{article}

%preamble

\title{FCM 187 – Headers and Footers}

\date{2022 November}

\usepackage{graphicx, fancyhdr, cite, enumerate}

\pagestyle{fancy}
```

Important Warning: During my

testing for this article I discovered that the instructions in the documentation did not always give the results described in the documentation. Test various options before using this package in your documents, particularly your organization's documents.

As usual with Latex/Tex, we use a command starting with a backslash: fancyhead or fancyfoot or fancyhf followed by some options. The full syntax is:

`\fancyhead[positions]{header}`

`\fancyfoot[positions]{footer}`

`\fancyhf[positions]{output}`

[positions] as you probably guess, refers to the location of the header or footer. The {header} area is for the text of the header or footer. Headers and footers can be aligned left, centre or right, and can appear on even pages or odd pages. Therefore the [places] option area will have three letters: E(ven) or O(dd), L(eft), C(centre), R(ight) and H(eader) or F(ooter). A missing letter means all possibilities are accepted, except fancyhead is H by default and fancyfoot is F by default. To have a header centred on even pages, the

simplest code would be \fancyhead[EC]. To have a footer on the left on all pages is simply \fancyfoot[L].

Upper or lower case letters can be used. The order of the letters does not seem to be significant.

I discovered adding commas between the position options changes the locations of headers and footers. For example \fancyhead[OR]{FCM 187} puts FCM 187 as header on the right side of every page (except page 1). \fancyhead[O,R]{FCM 187} puts FCM 187 into all three header positions on every page except page 1. This is equivalent to \fancyhead[]{FCM 187}. Using [c] or [e,c] gives the same result: one header centred on each page except the first. Remove the comma, use [ec], and there is no header. The same is true with left-alignment. [l] and [l,e] generate a header on the left side of all pages, [le] does not generate a header.

On the other hand [lo] puts a header on the left side of odd numbered pages which is what the manual says. [l,o] puts the same header in all three positions.

All of this testing was done with the \documentclass{article}. When I switched to \documentclass{book}, using [lo] did what it is supposed to do: left-aligned on odd-numbered pages. Inserting a comma [l,o] changed to a header on the left on even pages and three headers on odd pages.

There is a 39-page manual that comes with the fancyheader macro set. I suggest you read it carefully and experiment if you wish to explore other possibilities.

There are many other commands available that can be used for various options with headers and footers. \fancyheadoffset, \fancyfootoffset and \fancyhfoffset determine the distance outside the text margins that can be used by headers and footers. \headrulewidth and \footrulewidth are macros to define the thickness of a line under the header and above the footer. \headruleskip and \footruleskip are macros that define the distance between the lines and the header and footer text, respectively.

There is a default headrulewidth built into the style sheet for books and articles (0.4pt). The

headrulewidth and footrulewidth have to be reset using the command

`\renewcommand{\headrulewidth}{2pt}`

or

`\renewcommand{\footrulewidth}{1pt}`

using whatever width (thickness) is desirable.

There are other options to eliminate headers and footers, to have separate headers and footers for different sections, for pages that are purposefully left blank or that contain only a table or graphic. There are other options as well. If you are interested, read the documentation that comes with fancyhdr.

Again I say – experiment with the choices, do not assume the documentation explains or describes every case. This is a very useful tool and will let you make headers and footers the way you want them, if you learn how to use it.

Over the past two articles, I've introduced the Web > Interactive Mockup extension, and gone on to show how it's possible to create the same effect – and with fewer problems – with just a minimal amount of JavaScript. This time, I'll be finishing this project by adding a little more code that will demonstrate some additional mock-up capabilities that simply aren't possible using the extension.

As a reminder, so far I've created a mock-up design consisting of three layers, each representing a different page in a website (which could equally well have been a design for an app, tutorial or presentation). By stacking the layers on top of each other, the JS code simply has to hide all the layers, then re-show the right one when the mock UI is clicked. This code is stored in the Inkscape document, and accessed via File > Document Properties, then the Scripting tab, the Embedded Scripts tab, and finally clicking on the randomly-generated Script ID in the list. Your code will appear in the Content pane at the bottom of the

```javascript
document.documentElement.setAttribute("height", "100%");
document.documentElement.setAttribute("width", "100%");

function showLayer(id) {
   const layers = document.querySelectorAll("svg > g[*|groupmode=layer]");
   layers.forEach(layer => layer.style.display = "none");

   const layerToShow = document.querySelector("#" + id);
   layerToShow.style.display = "inline";
}

setTimeout(() => showLayer("home"), 100);
```

dialog – which is unfortunately not resizeable (you may wish to copy/paste between Inkscape and a text editor to make it easier to modify the code). After last month's additions, the code looks like that shown above.

Within each interactive element, a single line of JS triggers the change to a different 'page' of the demo. These can be found by right-clicking on one of the elements, selecting Object Properties, then expanding the Interactivity section at the bottom of the dialog. For my examples, I'm just triggering changes on mouse clicks, so the 'onclick' field contains something like this:

```javascript
showLayer("about")
```

That's all we needed to do in order to create an interactive mock-up that scales with the size of the web browser, and doesn't allow any non-active pages to be visible. Now let's push things a little further with the addition of some new features.

When looking at the pages of our mock website, it's clear that they have some common elements – in this case the whole header section. Wouldn't it be nice if we could keep those on a separate layer, so that any changes to those elements can be made in a single place, rather than having to apply them to each separate layer in our file? This is the sort of thing for which many applications use a

'Master' layer. Although not as politically charged as the use of 'master-slave' relationships in the computing world, it's nonetheless a term that can offend people, and which is tending to be phased out. So rather than propagate a troublesome word for no real gain, I'll be using the term 'Main layer'.

Our first step, therefore, is to split the file into a single Main layer, plus one additional layer for each page. The Main layer will contain all the common elements, and the others will contain just the page-specific parts. We therefore want our Main layer to be at the bottom of the z-stack, and to remain visible at all times. Here's how our existing three layers are split into the four we now need:

```
▼ <svg:svg id="svg242">
    ▸ <svg:script id="script12353">
    ▸ <svg:script id="inkwebjs">
      <sodipodi:namedview id="namedview244">
    ▸ <svg:defs id="defs239">
    ▸ <svg:g id="main" inkscape:label="Main">
    ▸ <svg:g id="contact" inkscape:label="Contact Page"
    ▸ <svg:g id="about" inkscape:label="About Page">
    ▸ <svg:g id="home" inkscape:label="Home Page">
```

On the left we have the previous three pages. On the right we now have our Main layer at the bottom, with the three content layers above. I've added a green border around each of the content layers to indicate their extents: they each now have a transparent background, so without that it wouldn't be so clear exactly how they relate to the positions in the old pages. These green borders are a temporary addition while developing the mock-up, and are removed before the layers are actually used. Additionally, although I've spread the pages out for this image, in practice they're all stacked on top of each other within the document's viewBox, as before.

By showing the Main layer, plus one of the others at a time, we can therefore reproduce the same appearance as the three layers in the old version. All we need to do now is to modify our code to do the same thing on our behalf. To make the new code a little more readable, we'll first use the XML editor to change the ID of the new layer to 'main', in the same way that we changed the layer IDs previously. When viewed in the XML editor, the top level of our document now looks something like that shown above.

Looking back at our JavaScript file from earlier, we still want our function to perform the same basic task: hide all the layers, then show a specific one. Except now we also want it to show a second layer at the same time. It's these two lines that are responsible for re-showing the specified layer in the existing code:

```
const layerToShow =
document.querySelector("#" +
id);
```

```
layerToShow.style.display =
"inline";
```

We could simply add a similar pair of lines, hard-coding the ID in the querySelector() call as "#main". That would definitely do the job, but it's not very flexible. What if we want to show two 'main' layers later, perhaps to separate the text from the graphic elements? To give us this extra flexibility let's create an array of layers that we want to show, then loop over them to turn them all on. If you're not a programmer you may not be familiar with arrays: for our purposes you can think of them as a special type of variable that can hold a list of things. For this simple mock-up, our list will always contain 'main' and the id that was passed into the function, but you should be able to guess how you might extend it to include 'main-text' and 'main-graphics':

```
const layersToDisplay =
["main", id];
```

Now we need to step through the array, pulling out one item at a time to work with. As we pull each of them out (using a forEach() loop), we get to assign the value to a variable. By naming this variable 'id', we are able to reuse our existing code for finding and showing the layer. The end result is

```
function showLayer(id) {
  const layers = document.querySelectorAll("svg > g[*|groupmode=layer]");
  layers.forEach(layer => layer.style.display = "none");

  const layersToDisplay = ["main", id];
  layersToDisplay.forEach(id => {
    const layerToShow = document.querySelector("#" + id);
    layerToShow.style.display = "inline";
  });
}
```

something very similar to the code that was previously at the end of the showLayer() function, just with a little more wrapped around it (shown above).

The last thing we need to do is to make sure that all the clickable elements still call the showLayer() function, passing the correct ID, after the re-working of layers that we did earlier. It's particularly important to double-check any items that you've moved to the Main layer. Once you're happy, load the page into a web browser and ensure each of the elements functions as you expect it to when you click on it – if any don't, then double-check the code associated with them.

So far, so good. But on trying out your interactive mock-up, you may have noticed that the mouse pointer doesn't change to indicate that elements are clickable. It's a minor visual thing, but we can definitely improve it. There are various ways to tackle this, but they all end up with us needing a line of CSS that tells the browser what cursor type to use. We want this to apply to all the elements with an 'onclick' handler. In our SVG, these are all implemented using 'onclick' attributes directly in the XML content – which means we should be able to add a style rule using an '[onclick]' selector (matches any element with an 'onclick' attribute). That sounds like a perfect use for Inkscape's 'Selectors and CSS dialog', right?

Wrong. As I mentioned in part 112 of this series, the dialog doesn't recognise the attribute selector syntax. An alternative is to create a suitable <style> block directly in the XML, either using Inkscape's built-in XML editor, or by

editing the SVG file in a text editor. Both of these approaches are a little awkward, especially if you're not already an XML aficionado. Instead, let's take a similar approach to the one we used for setting the height and width attributes: we'll write a short bit of JavaScript that will manipulate the document directly when it's loaded into the browser. We want this code to run once, on page load, so the following snippet should be added to the JS outside the showLayer() function. Just appending it to the bottom of the existing code is probably the easiest option.

```
let css =
document.createElementNS("http://www.w3.org/2000/svg",
"style");
```

```
css.textContent = "[onclick]
{ cursor: pointer; }";
```

```
document.documentElement.appendChild(css);
```

The first line of this code creates a new <style> block (in the SVG namespace) and assigns it to the 'css' variable. The second line just inserts a single CSS rule into the block: if any element has an 'onclick' attribute, the mouse cursor should be set to 'pointer' mode when it moves over the element. Finally, the third line inserts our new style block as a child of the <svg> element, after all the other content, where the browser will pick it up and automatically apply the rules.

There's one last thing I'd like to do to really make this mock-up work effectively. You may have noticed that each page includes a 'hamburger menu' at the top-right. Let's see if we can make that work, at least to some extent.

One approach would be to create six pages instead of three: a second version of each page would simply duplicate the original, but with the addition of the open menu. If you were solely using the Interactive Mockup extension, then that is pretty much your only option. But we're already up to our elbows in real JavaScript, so we have more subtle tools at our disposal.
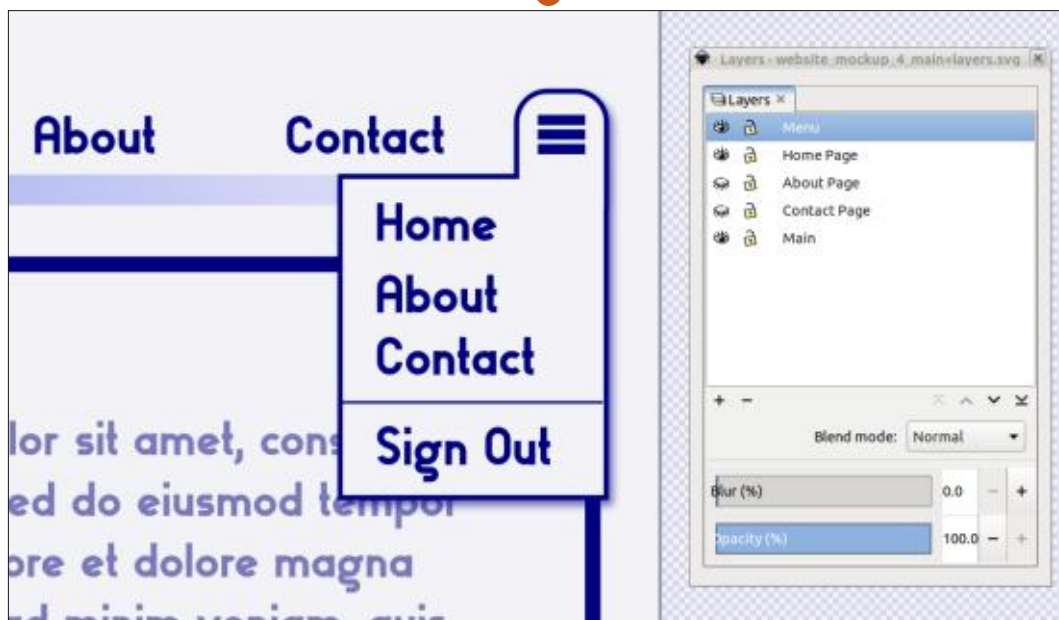
We've already discovered that we can have more than one layer visible at a time, and rely on transparency to ensure that all the right parts are displayed at once. This is, after all, what we did when we added the Main layer. So why not do the same with the menu? In this scenario each 'page' consists of the Main layer, the relevant page layer, and an optional menu layer that sits on top of them all. Let's begin by designing the menu as a new layer at the top of the z-stack (shown above).

Each of the first three entries in the menu carries the same onclick handler as the equivalent on the main layer (in fact I copied and pasted the objects from there). We'll deal with the 'Sign Out' option later. Now the question is how to make the menu pop-up when we click on the hamburger button – but that's really not so tricky. If we use the XML editor to give the 'Menu' layer an ID of 'menu', then you can probably guess what this function (shown bottom right) will do.

All we need to do now is to call the showMenu() function from the onclick handler of the hamburger menu that lives on the Main layer. We're not calling the existing showLayer() function, so none of the existing layers is hidden. All that happens is that the Menu layer is displayed in addition to the others that were already visible – exactly what we wanted.

As it stands, the mock-up is good enough for demo purposes, but perhaps a little clunky in parts. When the menu is 'opened', for example, there's no way to 'close' it other than to navigate to one of the pages. One possible enhancement might be to add an almost-transparent rectangle to that layer, behind the main content. A suitable closeMenu() function, and an onclick handler added to the rectangle, would allow you to click outside the menu to close it. I'll leave that one as an exercise for the reader.

And what of that 'Sign Out' option? You could create another layer containing a mocked-up sign-out dialog, but do you really need to? Once you're comfortable with

```
function showMenu() {
    const layerToShow = document.querySelector("#menu");
    layerToShow.style.display = "inline";
}
```

showing and hiding things in JavaScript, it's always tempting to go a little too far, and turn your 'interactive mock-up' into something approaching a full UI demonstration. Sometimes that might be appropriate, but often it's better to do the bare minimum you can to help people to visualise how the final website or application might work. Too much detail or functionality can actually be a distraction, and can even inhibit further discussions or ideas. In this case, therefore, the 'Sign Out' option will simply get an onclick handler containing this:

```
alert("You are now signed out");
```

```
document.documentElement.setAttribute("height", "100%");
document.documentElement.setAttribute("width", "100%");

function showLayer(id) {
  const layers = document.querySelectorAll("svg > g[*|groupmode=layer]");
  layers.forEach(layer => layer.style.display = "none");

  const layersToDisplay = ["main", id];
  layersToDisplay.forEach(id => {
    const layerToShow = document.querySelector("#" + id);
    layerToShow.style.display = "inline";
  });
}

function showMenu() {
  const layerToShow = document.querySelector("#menu");
  layerToShow.style.display = "inline";
}

setTimeout(() => showLayer("home"), 100);

let css = document.createElementNS("http://www.w3.org/2000/svg", "style");
css.textContent = "[onclick] { cursor: pointer; }";
document.documentElement.appendChild(css);
```

With that addition our simple mock-up is complete. The key thing to take away is that the code for doing something like this probably isn't as complex as you thought. While the Interactive Mockup extension can definitely be useful, you can easily get more functionality, and certainly a lot more flexibility, by just learning enough JavaScript to be able to target some elements in the page and selectively change their 'style.display' properties.

If you do want to reproduce something like my mock-up, perhaps as a bit of practice to get a feel for the JS side of things, here's the complete code we ended up with in the Document Properties dialog for your convenience (see above).

In addition to that, each clickable element on the page has a single function call in the 'onclick' field of the 'Interactivity' section at the bottom of the Object > Object Properties dialog. In most cases, this was just a call to the showLayer() function, passing in the name of the page to display (e.g. showLayer("contact")). In the case of the hamburger menu, it was a call to the showMenu() function. And our final addition was a call to the browser's built-in alert() function for the 'Sign Out' option.

When you take a step back and look at it, that's really quite a lot of functionality in this interactive mock-up, for not a huge amount of code. But we're done with this now – and with 'Interactive Mockup' being the last of the new extensions, we're done with the features that were added to Inkscape 1.x. Next month, I'll start what is sure to be a long series on the new features and additions in Inkscape 1.2.x.
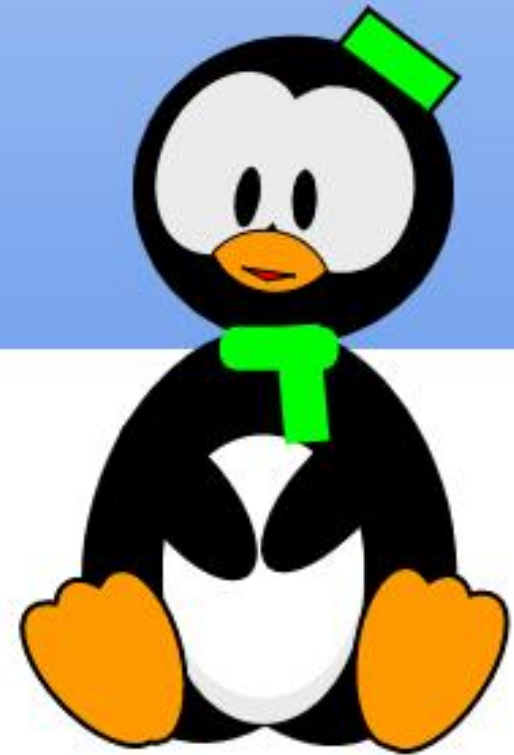
Mark uses Inkscape to create comics for the web (www.peppertop.com/) as well as for print. You can follow him on Twitter for more comic and Inkscape content: **@PeppertopComics**

BACK NEXT MONTH

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.

contents ^

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 .

The last few months have been an adjustment learning about data analytics. Data analytics is the science of reviewing raw data and making conclusions from the information. There are 3 programming languages often at the heart of data science: Python, R, and a SQL variant. By combining these three elements together, a person creates data visuals that can tell the story from raw data. I am in the process of becoming a data analyst.

Data analysts and statisticians fall into the realm of data science. However there are strong differences between the two professions. A data analyst is a jack of all trades, whereas the statistician is a dedicated mathematical specialist. A data analyst helps develop the possible hypothesis, and the statistician confirms the hypothesis.

I enrolled in a local college and took a Python course. I passed it as a requirement for graduate school enrollment. I used an openSUSE laptop and passed the class.

openSUSE did a great job of supporting my Python programming and learning.

Shortly thereafter I started graduate school and began learning R. The graduate class was poorly taught, and I eventually left it. Some of the difficulties included learning a new language, and the fact that R is more Debian friendly. Many times, the support package libraries for R under openSUSE were tedious to install.

Yet I wanted to continue on my path in data analytics. I enrolled in the Google Data Analytics Course. This process is entirely online. It allows me to continue my new professional development, while I find a better graduate school. I nuked my laptop and installed Ubuntu MATE onto it. And many of the issues I had with R under openSUSE were erased with Ubuntu MATE.

There are various tools utilized in the Google Data Analytics Course. Most of these tools are Windows or Mac friendly, and a few are cloud based. However I do not see many open source GUI based applications for data science. The two most popular options are Microsoft Power BI and Tableau. I have seen KST as being an option.

So exactly what is the point of this article? To find open source versions for data analytics.

SJ Webb is a former author for Full Circle magazine; he spends his days shaking his head at his coworkers within a research department at a world famous medical college.

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

It is time to start a new Ubuntu development cycle! This consists of three "interim" releases leading up to the next long term support version, Ubuntu 24.04 LTS, which is due out in April 2024.

Interim releases are the new official Canonical term for what they used to call "standard" releases. They try out new software and other changes to be incorporated in the LTS release, but are also functional standalone releases that can be used for getting work done.

In this cycle, the first interim release is Ubuntu 22.10, which came out on 20 October, 2022.

Ubuntu 22.10 is the 37th version of Ubuntu, and the 11th with the modified Gnome 3 desktop. Like the other recent interim releases, Ubuntu 22.10 is supported for just nine months, until July, 2023. The LTS releases have five years of support, with an optional ten years extended support available.

The first release after an LTS is always interesting, as it sets the tone for what users can expect over the rest of the development cycle. Often, the first release in the cycle introduces the main changes, which are then refined over the following two releases, resulting in an LTS that is very polished.

In this case, Ubuntu 22.10 brings some interesting new things for developers, system administrators and even for desktop users.

INSTALLATION

I downloaded Ubuntu 22.10 from the official sources via BitTorrent and did an SHA256 sum check to make sure it was an uncorrupted download.
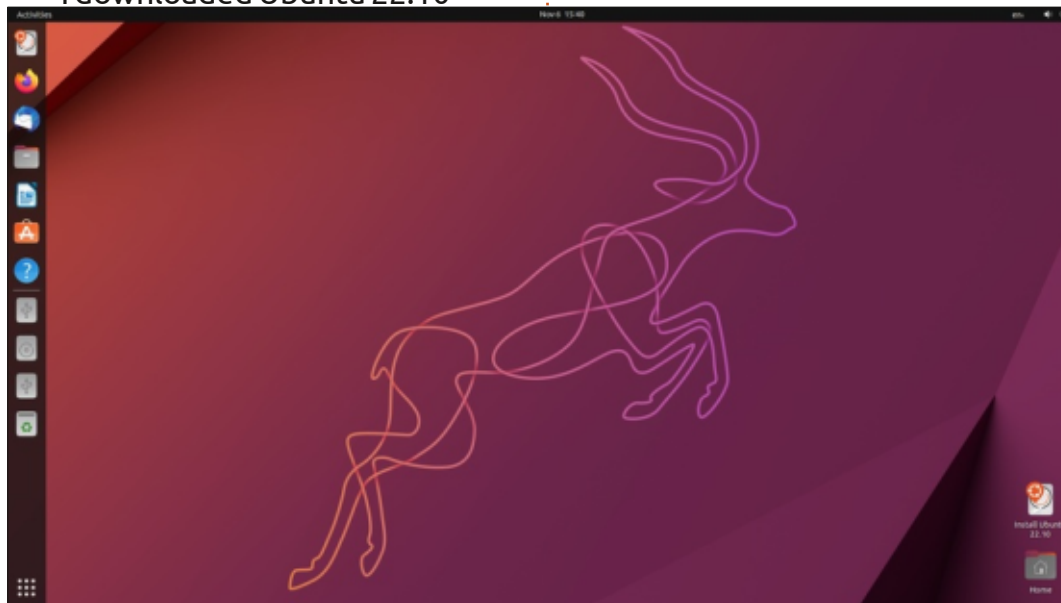
The Ubuntu ISO file is now up to 3.8 GB in size, which is 400 MB bigger than Ubuntu 22.04 LTS was, and 900 MB bigger than the previous release before that, Ubuntu 21.10. That means it has grown 24% in the past year although it is not clear why that is.

As in recent evaluations, I dropped the ISO file onto my USB stick equipped with Ventoy 1.0.81

and booted it up from that. Ventoy makes trying out Linux distros really easy and painless. They run from the stick as well as if they were installed on a hard drive.

One Full Circle reader did the system upgrade from Ubuntu 22.04 LTS to 22.10 and found that his system was very slow, with the CPUs maxed out due to tracker-extract-3 running. After a reboot or two, it settled down and everything ran normally.

SYSTEM REQUIREMENTS

The recommended minimum system requirements for Ubuntu 22.10 have not changed since 20.04 LTS and remain:
2 GHz dual core processor
4 GB RAM
25 GB of hard-drive, USB stick, memory card or external drive space
Screen capable of 1024x768 pixel screen resolution
Either a CD/DVD drive or a USB port for the installation media
Internet access is useful but not

essential

This means that Ubuntu 22.10 should run fine on hardware designed for Windows 7 or later. I would suggest 8 GB of RAM as a working minimum as Firefox alone can eat up 4 GB of RAM with some tabs open.

New

There is a lot new in Ubuntu 22.10, much of it aimed at internet of things (IoT) developers and system admins working in enterprise environments, but there are also some new goodies for the average desktop user.

For the developers, there are the usual and expected toolchain updates including Ruby 3.1, Go 1.19, GCC 12.2 and Rust 1.61. On Ubuntu Server, OpenSSH now uses systemd socket activation by default which means that the sshd daemon will not start up until a request is received thus reducing the memory required. A new tool, debuginfod, is now included for debugging the programs which are shipped with Ubuntu.

This release includes MicroPython for a variety of microcontrollers including the Raspberry Pi Pico W. The use of Kernel Mode Setting (KMS) graphics also means that developers can run Pi-based graphical applications

using other frameworks, such as Qt, outside a desktop session and without any Pi-specific drivers.

For admins, the Landscape 22.10 beta system management tool offers improvements, including ARM support. This release also supports RISC-V processors and hardware allowing Landscape to be deployed as a portable system.

For desktop users, this release drops PulseAudio in favor of PipeWire as the default audio controller. PipeWire is reportedly less buggy and has better hardware support.

Ubuntu 22.10 uses Linux kernel version 5.19 which has multi-

threaded CPU squashFS decompression which should improve the startup times for snap applications on some devices.

The initialization system is systemd 251.4. Systemd has now been the init system since Ubuntu 15.04, through eight years and 16 releases, and has proven to work reasonably well, despite detractors.

This release ships predominantly with applications from Gnome 43, which uses the GTK4 toolkit along with libadwaita. This should improve performance and also gives Ubuntu applications a more uniform look.

This version of Gnome also
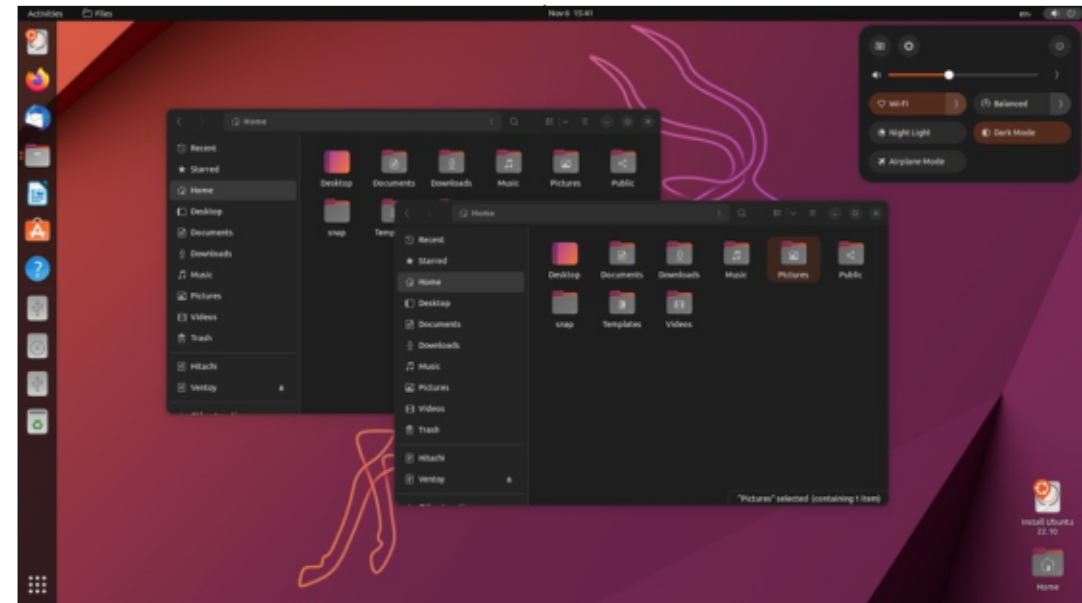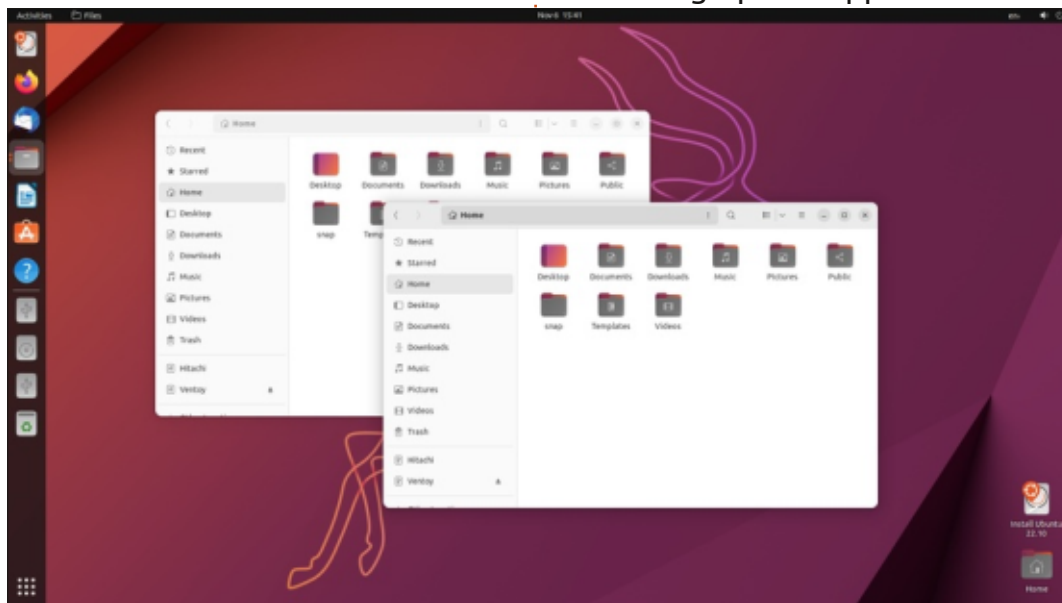
reintroduces an old feature that spreads out all open instances of any given single application when clicking on the application's icon in the Ubuntu dock.

The option of using a ZFS file system on a fresh Ubuntu 22.10 installation has been disabled due to a bug that prevents it being properly mounted on first boot. It should still work on a system upgrade from Ubuntu 22.04 LTS though.

For gamers, the Steam snap includes the latest version of the Mesa 3D Graphics Library to make games run better without needing outside PPAs. The Linux 5.19 kernel included has the new futex_waitv() syscall enabled, which will give performance gains when gaming using Wine or Proton.

In the official announcements, there are also hints of things to come in future Ubuntu releases. These include a new Flutter-based Ubuntu Software (snap-store) design to replace the current one based on Gnome Software, and a new Ubuntu installer called Subiquity which also uses a Flutter-based user interface. Look for these in the upcoming interim releases and, hopefully, they will also make it into Ubuntu 24.04 LTS.

SETTINGS

The top right status menu has added "Quick Settings" which are buttons that give instant user access to wifi, bluetooth, audio device selection, night mode, dark themes, and power settings, all without having to resort to opening the main settings menu.

Because this Ubuntu release is codenamed "Kinetic Kudo", after the species of African antelope, there are five new kudu-themed wallpapers among the eight wallpapers provided.

APPLICATIONS

Some of the applications included with Ubuntu 22.10 are:

Archive Manager (File Roller) 43.0 archiver
Cheese 43.alpha webcam application
CUPS 2.4.2 printing system
Document Viewer (Evince) 43.0 PDF viewer
Document Scanner (Simple Scan) 42.5 optical scanner
Duplicity 0.8.22 file back-ups
Files (Nautilus) 43.0 file manager
Firefox 106.0 web browser**
Gnome Calendar 43.0 desktop calendar
Gnome Disks 43.0 disk manager
Gnome Terminal 3.46.2 (for Gnome 43) terminal emulator
Gnome Text Editor 43.1 text editor
Gparted 1.3.1 partition editor***
Image Viewer (Eye of Gnome) 43.0 image viewer
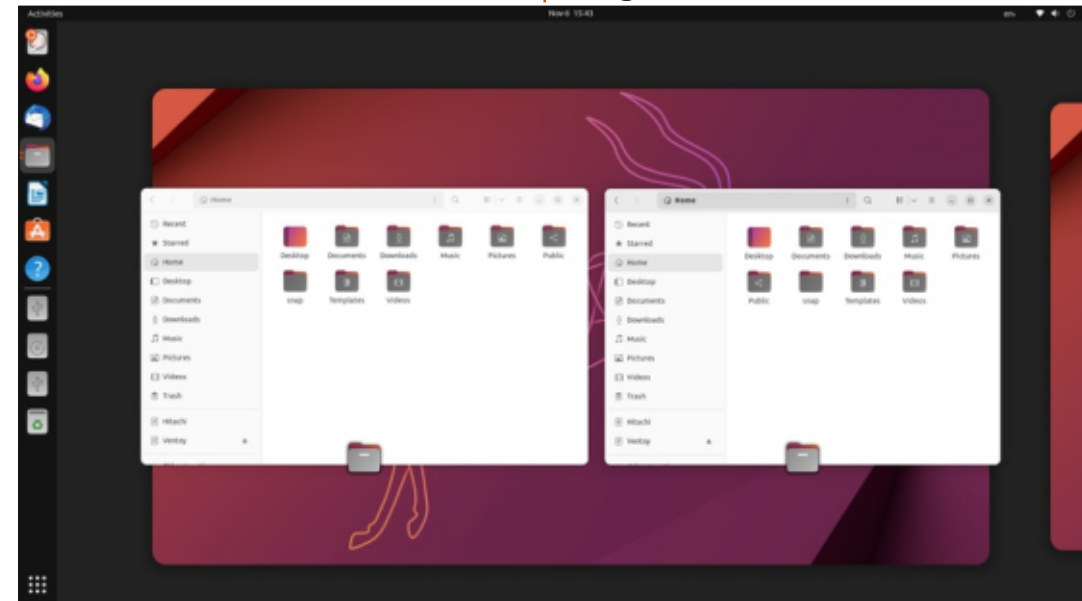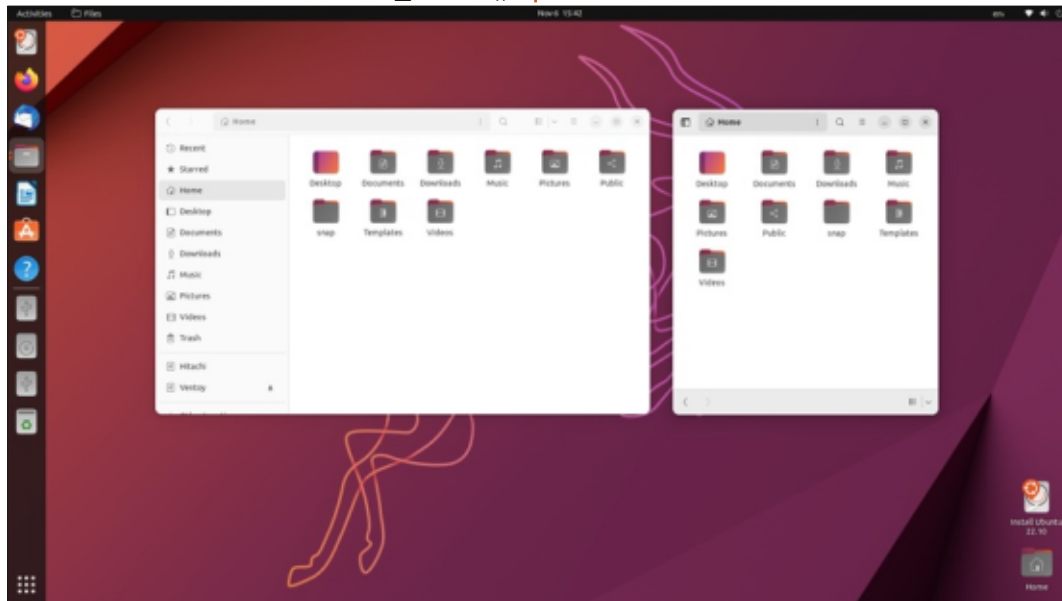
LibreOffice 7.4.2.3 office suite
Pipewire 0.3.58 audio controller
Remmina 1.4.27 remote desktop client
Rhythmbox 3.4.6 music player
Shotwell 0.30.16 photo manager
Startup Disk Creator 0.3.15 (usb-creator-gtk) USB ISO writer
Thunderbird 102.3.3 email client
Transmission 3.00 bit (transmission-gtk) torrent client*
Ubuntu Software (snap-store) 41.3 package management system**
Videos (Totem) 43.0 movie player
Wget 1.21.3 command line webpage downloader

* indicates same application version as used in Ubuntu 22.04 LTS
** supplied as a snap so version depends on the upstream package manager
*** indicates included on the ISO for boot-up but not included in a full installation

As can be seen from the above list, almost all the applications are from Gnome 43 with only Simple Scan as a hold-over from Gnome 42 and even it was a version upgrade from the last release.

One application has been dropped from the list of default applications: Gnome To Do, the personal task manager. If anyone misses it, it can still be found in the Ubuntu repositories and installed, although it is worth noting that both the application and the package name have been changed and it is now called Endeavour.

The gedit text editor has been part of Ubuntu since the start, but, after 37 releases, it has been replaced with the new Gnome Text Editor. This change may actually go unnoticed by most users, as in the recent past, gedit has appeared in the menus as "text editor" and the new application has the same menu name; even the application icons are extremely similar. Gnome Text Editor was created to retain most of gedit's features, but with an interface that more closely follows the Gnome Human Interface Guidelines. It is billed on its homepage as "a simple text editor focused on a pleasing default experience". Like most current Gnome applications, the interface is very simple and clean-looking. Gnome Text Editor has most of the functionality of gedit, including spell-checking, syntax highlighting, find, find-and-replace, line highlighting, and whole line deletion via ctrl+D. It has nine syntax highlighting color schemes, all of which can be quickly selected as light or dark schemes through the main menu theme. For fans of gedit, that application can still be installed from the Ubuntu repositories. There is even a new version for Ubuntu 22.10: gedit 42.2.

Ubuntu 22.10 includes the Nautilus 43.0 file manager which has now been migrated to the GTK4
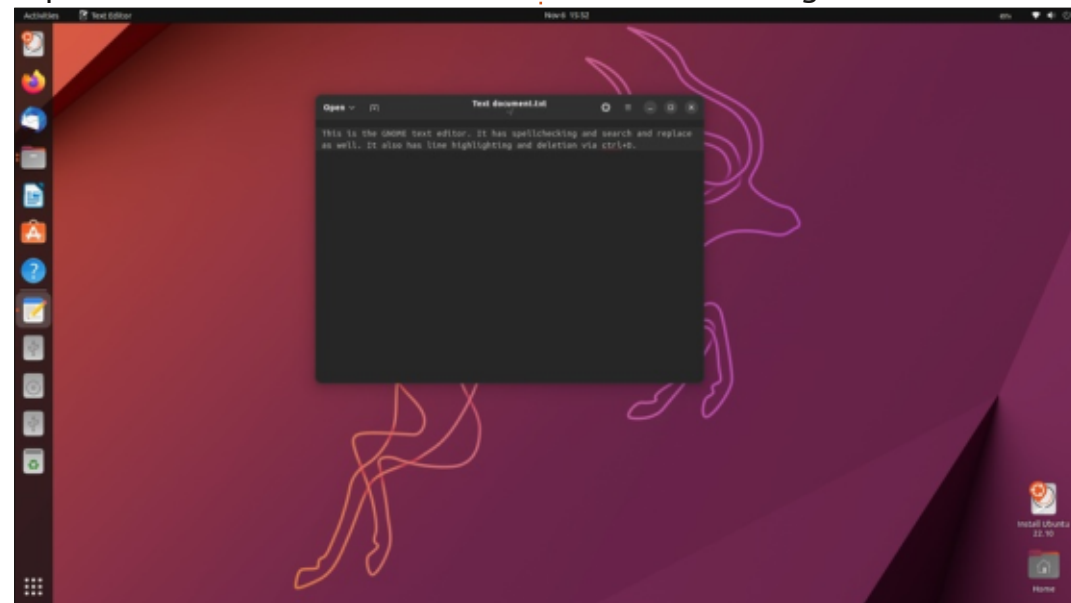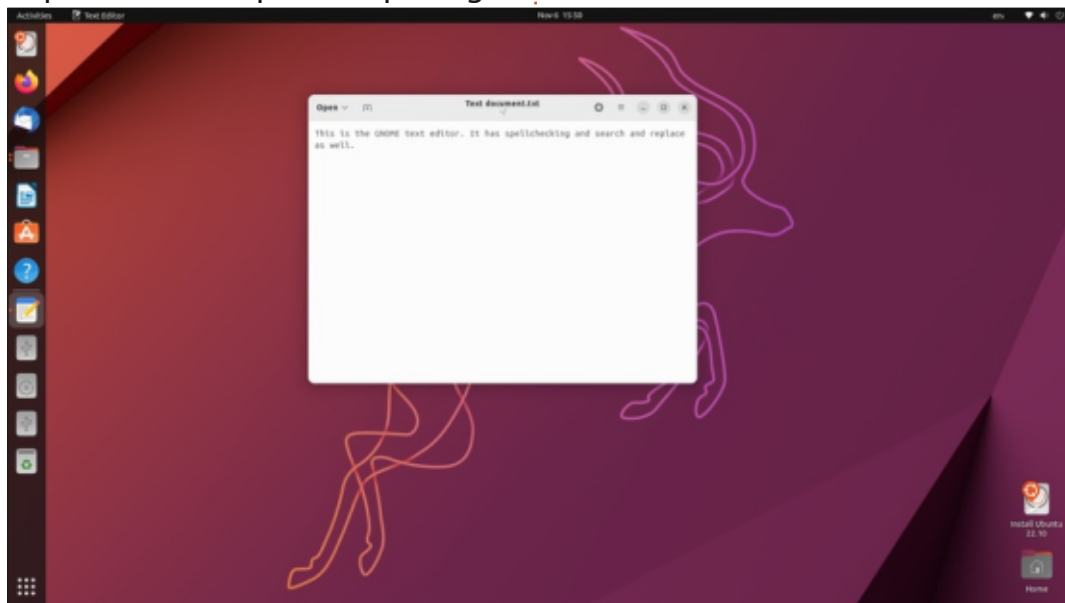
toolkit. This gives it a slightly new look and adds some new features including improvements to the list view. It now dynamically changes its layout based on the window size selected, and also supports the .webp photo format, as does the associated Image Viewer (Eye of Gnome) 43.0, which is a useful advancement.

As in past releases, the Ubuntu 22.10 version of LibreOffice is supplied complete, except for LibreOffice Base, the database application, which can be installed from the repositories if needed.

Conclusions

For an interim release, Ubuntu 22.10 is very solid, highly polished, and ready for everyday use. It brings some useful changes to kick off the new development cycle. It looks like users can expect some new ideas to make it into this cycle without any big changes or desktop paradigm shifts expected.

For some IoT developers, or enterprise sysadmins, this release may offer enough advantages to lure them away from 22.04 LTS, but my guess is that most desktop users will stick with the most recent LTS version for now.

The next interim release, Ubuntu 23.04, is scheduled for 20 April, 2023, so let's see what it brings along the road to the next LTS version.

External links

Official website:
https://ubuntu.com/
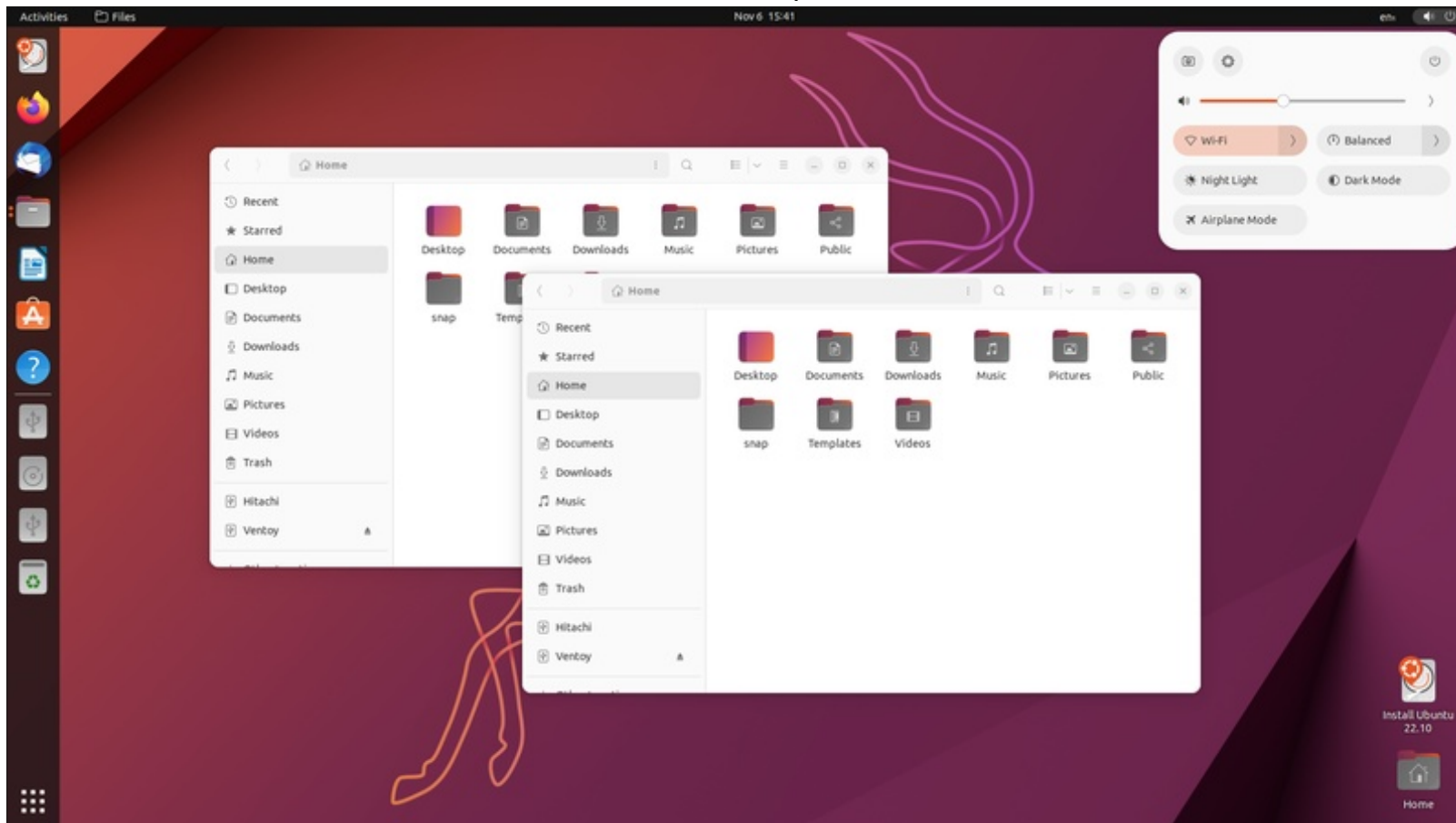
Adam Hunt started using Ubuntu in 2007 and has used Lubuntu since 2010. He lives in Ottawa, Ontario, Canada, in a house with no Windows.

There is a new Ubuntu derivative in the Linux world called VanillaOS. It is so new that it is not yet on DistroWatch; there isn't even a Wikipedia article about it! In fact, it is still in the beta testing phase and available only in an "unstable" version.

The distribution's website explains that: "Vanilla OS arose out of the need for an Ubuntu-based Linux distribution that would provide vanilla GNOME without any changes to the user experience. Later, its scope was extended to experiment with some tools and technologies, such as Almost (on-demand immutability) and Apx (the Distrobox-based subsystem)."

In many ways, VanillaOS is filling in the gap that the old Ubuntu Gnome occupied from 2012-2017. Ubuntu Gnome also offered a plain Gnome desktop on top of the Ubuntu backend, but its development was brought to a close when mainstream Ubuntu moved from the Unity interface to a modified Gnome 3 desktop, which more-or-less rendered Ubuntu

Gnome moot.

Of course, mainstream Ubuntu still has its modified Gnome desktop so VanillaOS will have to offer some interesting new ideas to entice users and create its own user-base niche.

Currently, the project seems to have 13 developers signed up on its GitHub page, with most of the work being done by one person, lead developer Mirko Brombin of Italy.

INSTALLATION
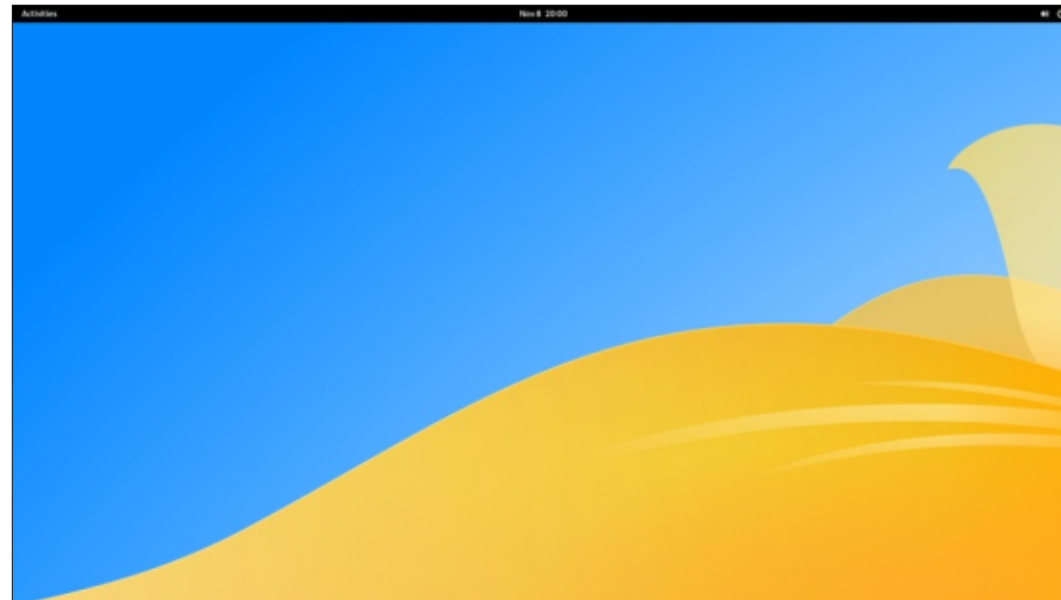
There is no download for the beta version on the official website, so I resorted to appealing to Mirko Brombin, and he pointed me to where it is on GitHub. I signed in and found it.

At this point in time, there are regular beta builds being made available for testing. I was able to download VanillaOS 22.10 unstable 20221106 via https. What you get is a 1.7 GB zip file that contains the 64-bit operating system ISO file, plus two text files with the MD5 and SHA256 sums. Very handy!

I did a SHA256 sum to ensure that the download was good and then dropped the ISO file onto my USB stick equipped with Ventoy 1.0.81 and booted it up. Even though VanillaOS is not officially supported on Ventoy, being an Ubuntu derivative it worked fine and everything ran as fast as it would on a hard drive installation.

SYSTEM REQUIREMENTS

There are no published minimum system requirements yet but, since VanillaOS 22.10 is based on Ubuntu 22.10, it is probably reasonable assume that the same requirements apply:
2 GHz dual core processor
4 GB RAM
25 GB of hard-drive space

FEATURES

Booting up VanillaOS indeed brings up a cheerful-looking, very vanilla, unmodified Gnome desktop. Even the default wallpaper is "vanilla", literally, as it

features a vanilla flower, the emblem of the project.

Boot-up also opens a warning that this is beta software and not "production ready". I was expecting crashes and missing features but, in fact, everything worked pretty well with only automatic screen power-off noted as not working yet.

For anyone coming from Ubuntu, the Gnome desktop looks very stark with just a top panel with the on/off switch, speaker, date and time, and the activities menu – which is where everything is hidden. There is no dock on the desktop. Clicking on the activities menu or hitting the "super" key (windows key) opens the menu, allowing searching for documents or applications from the list or dock, as well as selecting desktops.

Being plain Gnome, the application windows have only a single "close" button although "hide", which works like "minimize", is available from a right-click. Like Ubuntu 22.10, there are only two choices of window themes: light and dark, although, interestingly, the wallpaper darkens when the dark theme is selected.

Perhaps to offset the limited number of window themes, VanillaOS 22.10 comes with an extensive choice of 35 wallpapers, some from Ubuntu and some original. All of them are elegant-looking choices.

Everything looks very "stock" until you come to the Vanilla Control Center, and it is here that you find the immutability switch! This activates the custom-designed, on-demand, immutability capability called "Almost". Immutability in this context means that the operating system is locked from changes, and this translates to immunity from corruptions or malware. The only trouble with immutability is sometimes you do want to change things which is why it can be selected off. You can even then revert changes and reinstate immutability afterwards. The Apx package manager isolates packages in a subsystem allowing them to be installed or removed without affecting system immutability.

Is selectable immutability something most desktop Linux users yearn for? Probably not, as it is found only in specialist distributions such as NixOS and not in mainstream distributions like Ubuntu or Fedora.

On installation, VanillaOS allows a choice of package formats to be used including .debs, snaps, appimage and flatpak. The Gnome Software graphical application is available, as is the Apx package manager.

VanillaOS is a conventional "point" release with updates and
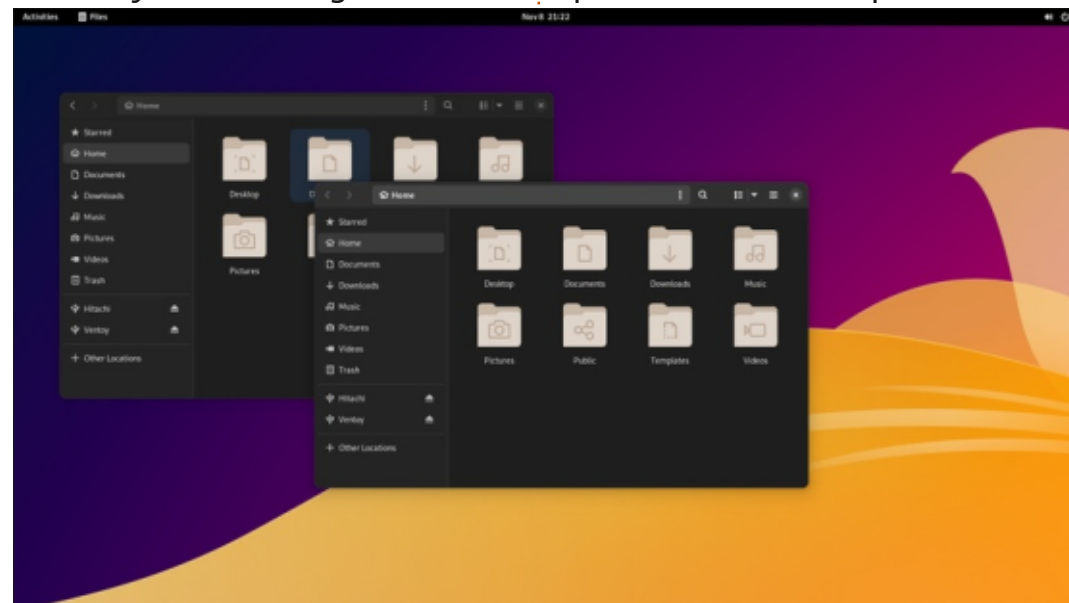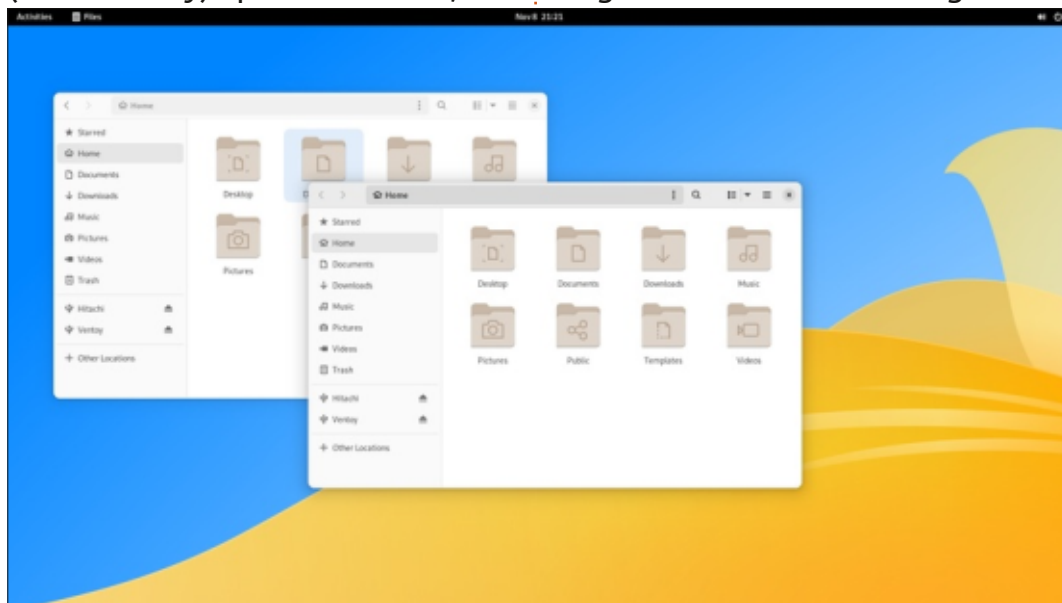
not a rolling release. The project website explains that rolling releases have too much risk for the level of stability and reliability they are seeking.

APPLICATIONS

The applications included with VanillaOS 22.10 are:
Archive Manager (file-roller) 43.0 archiver
Files (nautilus) 43.0 file manager
Gnome Disks 43.0 disk manager
Gnome Music 42.1 music player
Gnome Photos 43.0 photo organizer
Gnome System Monitor 42.0 system monitor
Gnome Terminal 3.46.2 (for Gnome 43) terminal emulator
Gnome Web 43.0 web browser
Gparted 1.3.1 partition editor
Gnome Software 43.0 package management system
Videos (totem) 43.0 movie player

This is obviously a fairly skimpy list and missing many of the applications most desktop users would expect, such as a PDF viewer, image viewer, text editor, and an office suite. These are all available in the repositories, however, making them easy to install.

It is worth noting that no games are included, which I always consider a good sign!

It may be that the included application list is short because this is just a beta release and the final version will include more.

In many ways, I prefer a distribution that by default includes only a bare minimum of applications. This makes for a smaller ISO download (compare VanillaOS 22.10 at 1.7 GB to Ubuntu 22.10 at 3.8 GB), and also means that you can just install what you need, keeping the menus uncluttered, with no time spent removing applications you don't want.

CONCLUSIONS

Considering that VanillaOS is just in beta testing right now, it is actually pretty good. Most things work well, but that shouldn't really be a surprise considering that it uses well-tested components like the Ubuntu backend and the Gnome desktop. The result, at least as of this beta release, is pretty polished and stable with just a few items to fix.

Going up against Gnome-based distributions such as Ubuntu, Fedora and NixOS, one of the questions that VanillaOS will have to answer is… can it attract users? VanillaOS seems to be aimed at people who like Ubuntu in principle but want a pure, unmodified Gnome experience – with selectable, optional, immutability

and custom package management. Are there enough users who can be lured to that? Perhaps it doesn't matter. This is not a for-profit enterprise that has to attract customers or die in the marketplace. There are many Linux distributions that are put together for the use of the developers alone, and if anyone else wants to join the community, they are welcome to do so. There is a lot to be said for doing it right, rather than making it popular. If it is good, people will use it.

As of this release, VanillaOS is working well and it looks like it has good potential for the future. Hopefully soon, it will exit its beta testing phase and be made available as a public download for general use. I am hoping to have another look at it then and see how it is faring.

EXTERNAL LINKS

Official website:
https://vanillaos.org/
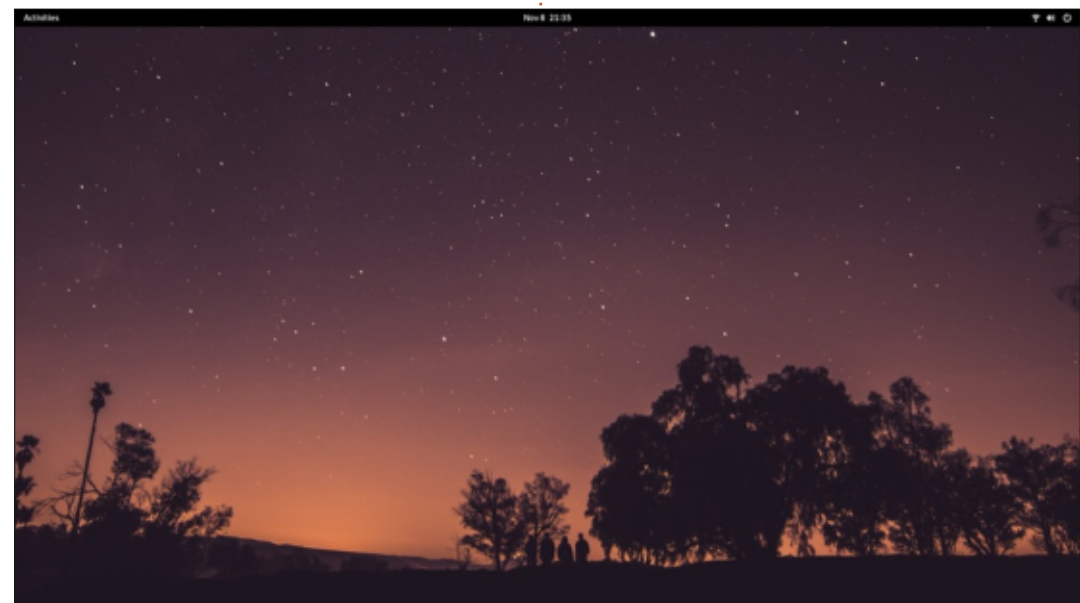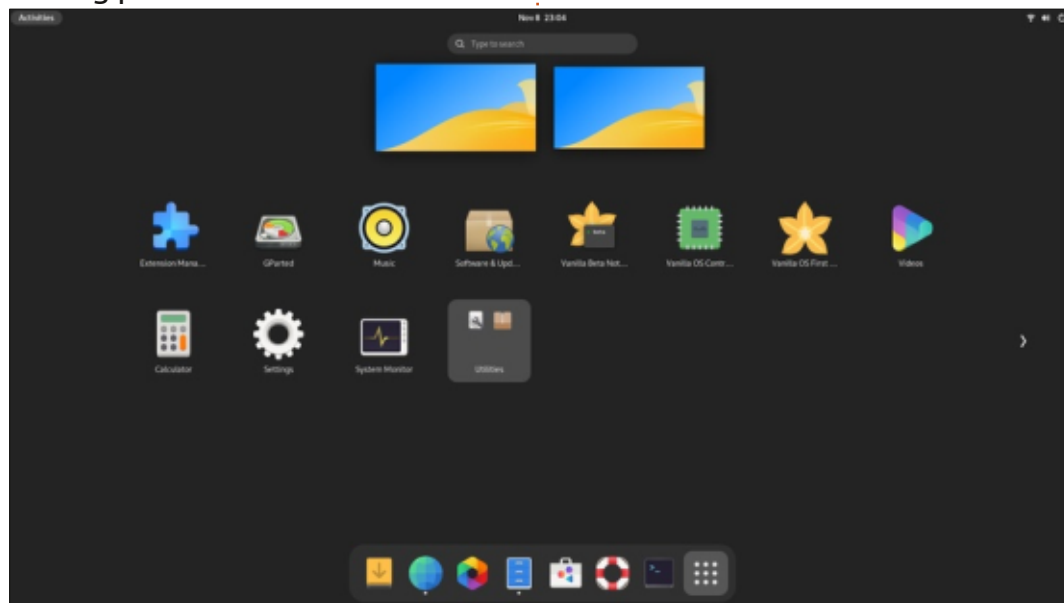
Adam Hunt started using Ubuntu in 2007 and has used Lubuntu since 2010. He lives in Ottawa, Ontario, Canada, in a house with no Windows.

NOTE: see this month's letters page for more Ventoy shenanigans.

I have been meaning to try out Ventoy for some time but kept putting it off for reasons I will explain, but this week I really needed a new ISO writer to put a Linux distribution onto a USB stick and my old methods were not working.

In recent years, I have been using UNetbootin for writing ISO files to USB drives for software reviews. I was recently asked to do a review of Fedora 35 for Full Circle but, even though UNetbootin lists Fedora as supported, it would not create a bootable drive that worked.

I also tried the command-line program "dd" and it also failed to work right and did not produce a working USB drive.

ENTER VENTOY

I have looked at Ventoy in the past, but every time I read through the official website documentation trying to figure out how to use it, I found it Byzantine and basically incomprehensible. This time, with a pressing need, I persevered and managed to get it working despite the documentation.

The application itself is actually brilliantly designed and works very well. In fact, it is a whole new paradigm in ISO writing. To make things simpler, though, I will provide instructions on how to use it in this review.

Ventoy is free software, released under the GPL 3+ license and is developed by Hailong Sun. It runs on Linux and Windows, but you won't find it in the Ubuntu repositories. It has to be downloaded directly.

CONCEPT

Ventoy works quite differently from other USB writers. Basically all of them are designed to take a downloaded Linux distribution ISO file and put it onto a USB drive, in a bootable form, so it can be tested out in a "live session" and optionally installed. Most ISO writers, like Ubuntu's Startup Disk Creator and UNetbootin, work in the same basic way. You install the application on your computer, then you download the ISO file for the distribution you want to try and use the application to unpack and write a single ISO file to a USB stick. Then, you reboot your computer, select the USB drive and it loads, presenting a desktop when done.

Ventoy is different. You download the program as a tar.gz compressed archive and then unpack it. You run the script it

REVIEW
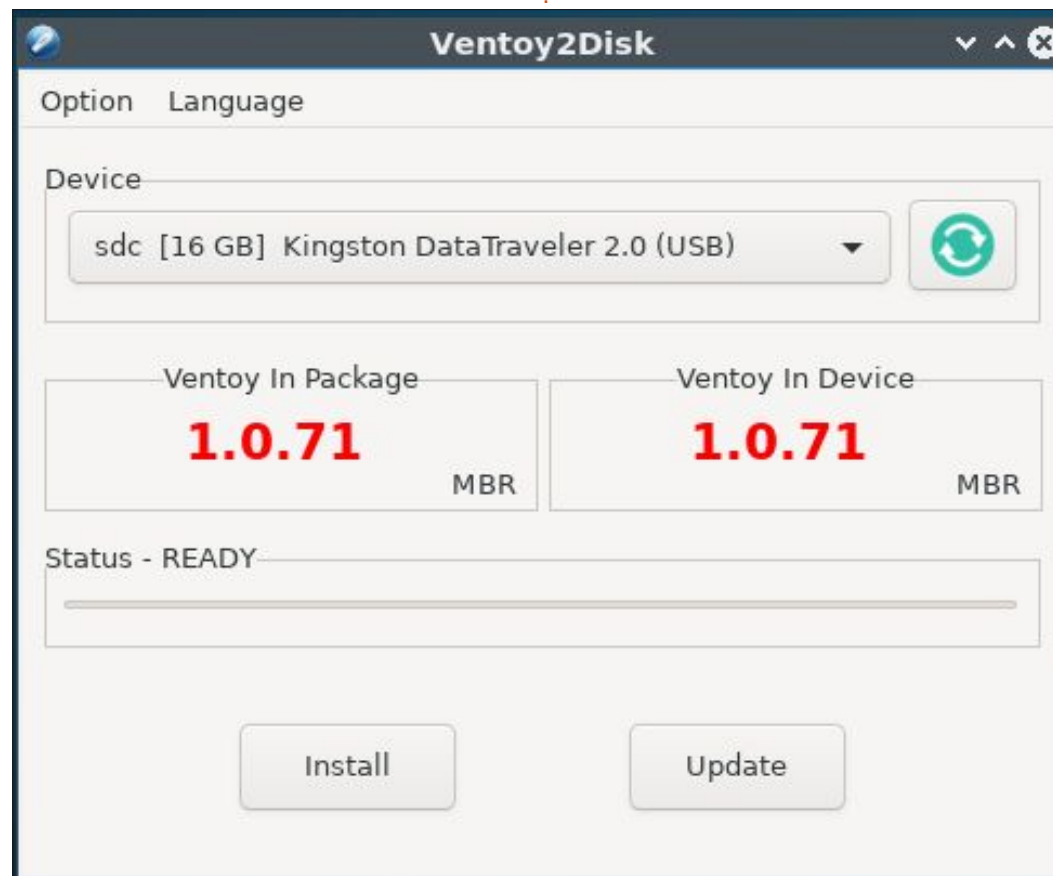
provides for your computer architecture, like x86. This opens a graphical interface which allows you to install Ventoy on your chosen USB stick, not on your computer. In configuring the stick, it creates two partitions, one in exFAT format for the ISO files and one in FAT16 for Ventoy itself. The exFAT partition is open so you can cut and paste ISO files into it using your file browser. Yes, that is plural: more than one ISO file can be added depending on the size of your USB stick. When you boot to the USB, a selection screen allows you to choose the one you want to try out. The ISO files are not unpacked or written to the stick, just stored there and opened by Ventoy on boot-up.

This all makes actually using Ventoy very easy, once it is installed on the stick. You can load up your USB stick with all the Linux distributions you want to try and then boot to them in sequence, without having to rewrite your stick each time or prepare multiple sticks. This saves a lot of time. New ISO files can be added to the Ventoy USB stick and old ones removed at any time, limited only by the physical drive space available. File organization doesn't

matter either. ISO files can be in folders. and Ventoy will still find them and display them on the boot menu. You can also still use the stick for other, non-ISO files, and Ventoy will not offer them to boot.

It is almost like Ventoy was designed for software reviewers or at least those users keen on distro-hopping (distro-hopping is the Linux religious devotional practice of trying out an infinite number of Linux distros in the hopes of finding the perfect one, sort of a Quest for the Holy Grail).

Support

Ventoy supports more than 830 operating systems, including systems from the Linux, Unix, BSD and Windows families. It has been tested on 90% of the DistroWatch list and the website documentation provides a list of those that have been shown to work.

Ventoy can be installed on a USB stick, a local disk, SSD, NVMe or SD card. It will boot ISO, WIM, IMG, VHD(x) and EFI types of files.

Ventoy actually does much, much more, just ... um ... read the documentation.

GETTING VENTOY

Ventoy works really well, you just have to get it installed. Here is what I learned.

To use Ventoy on any Ubuntu derivative:
• Download the linux.tar.gz file from GitHub https://github.com/ventoy/Ventoy/releases to your home directory (the current version is ventoy-1.0.71-linux.tar.gz, an 18.5 MB download).
• Run a SHA 256 sum check on the file from a terminal, to make sure it is a good download:
    $ sha256sum ~/ventoy-1.0.71-linux.tar.gz
and compare the result with the SHA 256 sum at https://github.com/ventoy/Ventoy/releases — they should match!
• Right-click on the file and select "open with" your file archiver (on Ubuntu: Archive Manager (File Roller)).
• Once the file archiver opens it, select "extract" and it will create a folder in that same directory with the title "Ventoy" plus the version
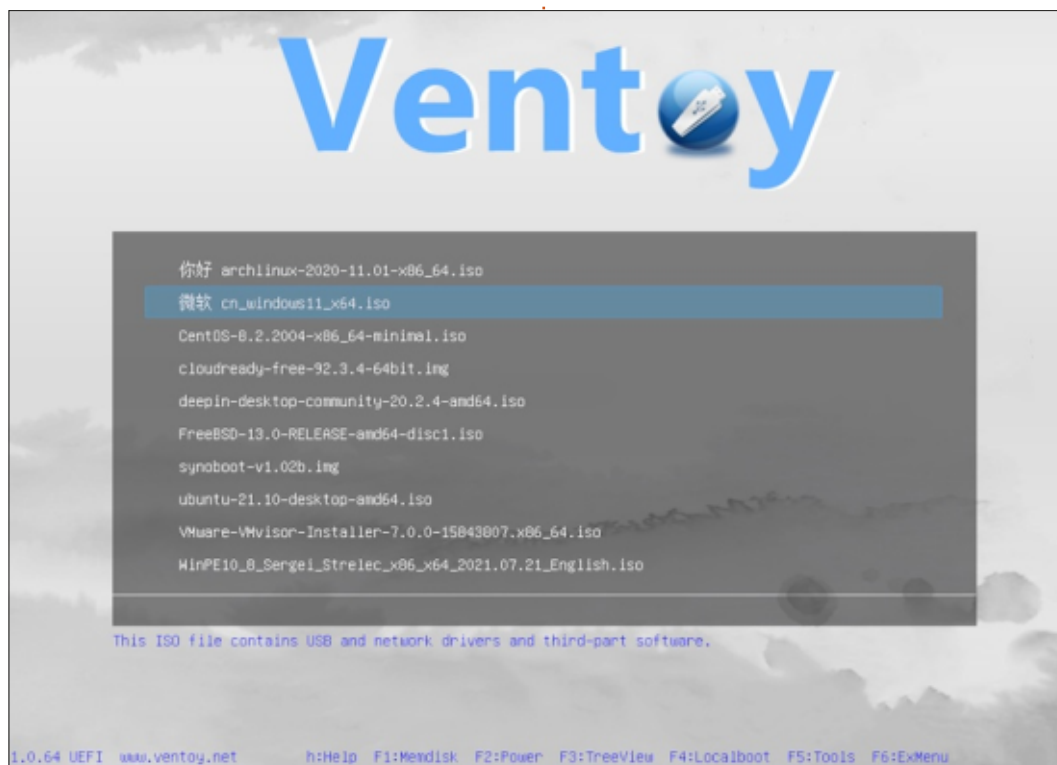
number.
• Plug in the USB stick you plan to use.
• Open the Ventoy folder.
• Double-click on the script: VentoyGUI.x86_64 (or other architecture type).
• Select "execute in terminal".
• Enter your system password and it will open the graphical user interface.
• Select the USB device from the drop-down menu and click "install".

Once the installation on the stick is complete:

• Cut and paste or drag and drop ISO files to the stick using your file browser.
• Reboot, select the USB drive.
• Select the distribution from the boot screen and it will load.

UPDATING VENTOY

Your Ventoy installation on the USB stick can be manually updated to a new version by just running the VentoyGUI.x86_64 script again and selecting "update" from the interface. This can be done without affecting any ISO files in the exFAT partition on the stick.

CONCLUSIONS

Overall Ventoy is a brilliantly designed application that sets a new standard for ISO writers. Once installed on a USB stick, it provides a lot of flexibility for trying out Linux distributions and saves a lot of time too. The official documentation is complex and confusing, but once you have it installed, Ventoy works great.

EXTERNAL LINKS

Official website:
https://www.ventoy.net/

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

VENTOY

In each review, Adam Hunt is careful to mention Ventoy and the ease with which one can simply copy and paste ISOs onto a USB key equipped with it, in order to test and/or install the various distros, without fuss or worry.

My computer (a 4 and a half year old ASUS) works quite well under Windows 11. Almost every other computer in the house, including my husband's, is equipped with Ubuntu MATE. But I do have a small Samsung laptop with Windows XP on it (I think). At any rate, it is OLD. I suspect it may even be 32-bit, but I don't know.

To make a long story short, I thought I'd try out various distributions on it and so I downloaded Ventoy (01 July, 2022) and, after a rather disastrous trial with a 32GB stick, put it on a 64GB USB stick. I have put a number of distros on the stick. This morning, when I checked to see if I could find the version of Ventoy, I saw there were two partitions: one for all the files and folders of Ventoy, and the other for the distros.

The reason I'm writing this letter is that I have found that Ventoy seems to cannibalise the USB stick. Let me explain: once Ventoy is on a USB stick, it seems impossible to get rid of it. It also seems impossible to find out what version of Ventoy I have. I wanted to put movies on the 32GB stick on which I had installed Ventoy first, but found that it was impossible to get my 12-year-old TV to read them. I also found it impossible to turn that USB stick into a normal stick. I ended up reformatting the stick in NTFS slowly (not a quick reformat) and, afterwards, (and, of course, after I put a few movies on it), when I plugged it into the TV, I was able to see only the movies. Victory! Or so I thought!

Yesterday, however, when I wanted to watch one of those films, I found myself unexpectedly in a Ventoy directory. After fiddling around with the Source to the TV, I found that the USB stick had two partitions, one with Ventoy and the other with the movies (which could be watched). Yet I had been under the impression that I had truly suppressed Ventoy.

So I would like to ask Adam Hunt: even though Ventoy works beautifully if you use it for what it's intended, how do you remove it if you want to use the USB stick for something else entirely?

Elizabeth (AuntieE)
French Translation Team

Thank you for your email. This is an interesting puzzle and one I have not encountered, although I have generally run into USB sticks that start misbehaving, won't mount, or won't eject, transfer data, etc. I am never totally sure what causes this, but it often seems to be a file system formatting sort of issue.

It is worth noting that Ventoy leaves the USB stick with two partitions, a large storage partition in exFat format, and a small (32 MB) EFI boot partition in FAT16 format,

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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.

of all things. The Ventoy home website seems to have no documentation on removing Ventoy from a stick. In theory, it should be possible to use it as a regular storage device with any computer or other hardware that can read exFat , but it is quite possible that older TVs, like yours, have a file system compatibility issue there. I am pretty unfamiliar with Windows and its tools these days, so this explanation will be for Linux computers.

I haven't had to do this with a Ventoy-equipped stick, but, in general, what I have found to get a balky USB stick working again is:
• Try a simple reformat (which you tried) using a tool such as Gnome Disks. This alone will sometimes fix a stick.
• Try a more capable tool, such as GParted. Use "Device > Create partition table" as this will completely reformat the USB stick and should erase anything on it.
• If that is not successful, try the Linux command-line program badblocks (which comes with all Ubuntu derivatives).

The command is:
```
sudo badblocks -wsvb 1024 -c
512 /dev/sdh
```

You should use GParted to confirm the exact mount point on the individual computer, however, as it may be /dev/sdh, or /dev/sdi, etc. You do not want to run this on the wrong device!

Badblocks will test the USB device, completely erase the whole device and overwrite each sector in testing it. Running it may take a while, depending on the computer's processor speed and the capacity of the device. Once that has completed, a check with GParted should show that the USB is empty and not formatted. It can then be formatted to a suitable format, like FAT32 or NTFS and used normally.

If none of that fixes it, then I would suspect that the USB stick is failing at a hardware level.

To address your other note, yes you are correct, Ventoy does not report its version number, at least not easily! There are only two ways I have found to figure out which version you have installed. The first is to just keep the current download folder, which has the number on it, or to run the Ventoy update GUI from any Ventoy download folder and it will report the version

number. It would be a nice addition if, on booting it up, it reported the version number!

I hope this all helps. If any readers have more, or better information, please do write to Full Circle and share your knowledge and experiences!

Adam Hunt
Reviewer Extraordinaire

In order to try out the Gparted solution, I plugged it into a computer with Ubuntu MATE on it. Guess what? It shows up as 'Unnamed' - NOT two partitions – with only the films and a folder called System Volume Information on it. There is no hint whatsoever of Ventoy. Curiouser and curiouser.

I thought I would do the Gparted solution anyway to see whether Ventoy has completely disappeared when the stick is read by Windows and by the television. BUT, when I looked at the stick with Gparted, both partitions were actually present: sdb1 ntfs with the flag boot, and sdb2 fat16 with the label VTOYEFI and the flag esp. When I tried to do Device > Create partition table, I got a long

message, saying it was impossible to do so because some of the partitions were active (although neither was selected). I unmounted the USB stick that showed up as Unnamed, but that made no difference whatsoever. My conclusion is that the Ventoy partition is the active one. Ventoy seems to be sticking like glue.

I'll try the badblocks solution tomorrow and report back on that.

…

The first message I got from badblocks was '/dev/sdb is apparently used by the system ; it is not prudent to run badblocks!'

So I waited, restarted the computer, put the stick in and ejected Unnamed. This time, the message was 'No support found when badblocks tried to determine the size of the device'. Although I had ejected Unnamed, when I went to Computer, I found that a 'generic flash disk' existed. I ejected it but nothing changed until I took the stick out anyway. I waited a bit and put it in again. Unnamed was visible, but, when I ran badblocks once again, I got the original message. I can only guess that,

because the stick is 'used by the system', I cannot run badblocks.

Incidentally, when I restarted the computer with the USB stick plugged in, it almost immediately came up with Ventoy. It would seem that the version is 1.0.78 UEFI. At least I could 'Press Enter' to reboot.

Under Windows, I formatted only the Ventoy partition, leaving Unnamed untouched, and Windows now says that the Ventoy partition is empty. Maybe I can use badblocks, so it's back to Ubuntu MATE to see. Although all that is visible in the Ventoy partition is Volume Information, badblocks tells me once again that '/dev/sdb is apparently used by the system ; it is not prudent to run badblocks!' But, when I rebooted Ubuntu with the USB stick in position, I no longer got the Ventoy screen, which must be a good sign. Back to Gparted, both partitions were active, or so it said. I unmounted them, to no avail. So I'll reboot, unmount the partitions on sdb (the USB stick) and then try Gparted. Oh yes, although most of Ventoy is gone, that partition is still named VTOYEFI, so I will rename it to something else. Rename was

unavailable for VTOYEFI in Ubuntu or in Windows. So, in Windows, I reformatted it to be able to give it the name Hindrance. Strangely enough, that became HINDRANCE.

Creating a new partition table in Gparted continued to be impossible. But I tried one last time with badblocks and it seems to be working! All that was needed was not only reformatting, to eliminate any bit of Ventoy in that partition, but also eliminating any reference to Ventoy in the name of that partition.

My final goal is to have a normal USB stick with only one partition. And, Adam, thanks to you and your suggestion of badblocks, it looks like I'm on my way!

Elizabeth (AuntieE)
French Translation Team

Wow that was a torturous process. Hopefully badblocks resolved it for you in the end, and you were able to reformat it after? badblocks won't work if there is a process running on the drive, which must have been Ventoy itself.

Adam Hunt
Reviewer Extraordinaire

Yes, thank you, Adam. I just reformatted the USB stick with only one partition on it. All is well.

Elizabeth (AuntieE)
French Translation Team

THE END

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.

_____

BACK NEXT MONTH

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.

BACK NEXT MONTH

Josh Hertel is a husband, father, mathematics educator, tabletop gamer, techie, and geek.
https://twitter.com/herteljt

contents ^

Website: https://agateau.com/projects/pixelwheels/

Code: https://github.com/agateau/pixelwheels/

Price: Free!

Blurb: "*Top-down retro racing game for PC (Linux, Intel-based Mac, Windows) and Android. Race for first place on various tracks. Pick up bonuses to boost your position or slow down competitors!*"

We are talking top-down racing today, around a track, with pixel cars. I mean, who does not get a bit nostalgic around Christmas? I want you to conjure memories of Supercars 1 & 2 (1991), Nitro (1990), Roadkill (1994), Overdrive (1993), Turbo (1989) on your home computer. Hell, even the clones, like Apogee's Death Rally (1996). I want you to think about Sega's four-player arcade game with four steering wheels that would rob you and your mates blind on weekends. This does not include things like Ironman Stewart's or Badlands or any of the slightly twisted /

isometric racing games, or I'll be at this until next year. (I stopped counting at 712!!) However, if this makes you happy, please DO think about it, I just won't be talking about it.

Now, when you talk about something, somewhere, along the line you have to compare it to something else, because if you have no point of reference, how do you know if you are moving?

These days, you can find top-down racers everywhere, from your phone to steam. It makes it difficult

to write about where you, the reader, won't just write it off as another top-down racer. (Believe it or not, but this is the FOURTH iteration of this article.)

We will head over to itch.io for this one, as the Flathub version is two versions behind (https://agateau.itch.io/pixelwheels). Not only is it free, you can grab the source code and modify it to your twisted desires. Which is why we are talking about this specific one today.

Back in 1983, my first top-down

racer was written in BASIC on a ZX spectrum and the red 'car' flicked from 8x8 cell to 8x8 cell. That put me off programming for years and I don't think I ever gave it another thought until the Amiga racers in the 1989-1991 era, culminating with Codemasters' excellent title, Micro Machines, for the PC. The top-down genre, either had your car speed around a simple single screen track or had the camera fixed to your car with the track extending out of the screen. Think of something like Rally-X.

Pixel Wheels falls into the latter category. It is a single developer game (by Aurélien Gâteau), so we can call it an Indie game. It works great on Linux, and plays buttery smooth on my potato laptop. Considering the game is written in Java!! It has that 16-bit aesthetic but the sprites are definitely not 16-bit. By this, I mean that they don't conform to the little 16-bit memory-limited sprites you got to see on those machines. They look good for an Indie game; they are not great, and don't jump out at you. That said... You do get to drive
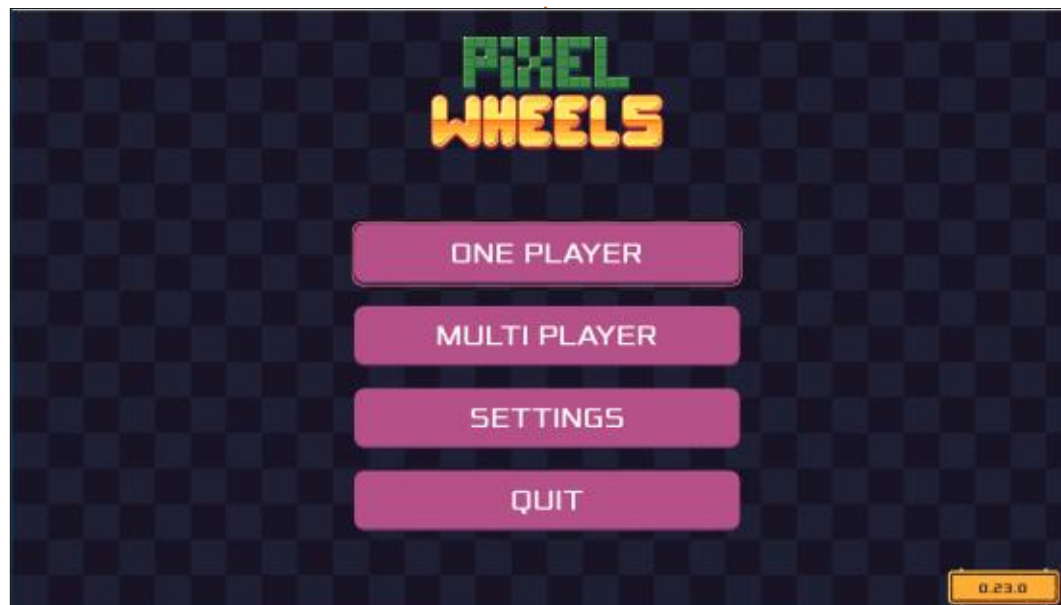
the Batmobile! <insert fanfare here> P.S. The Batmobile is a locked vehicle at the beginning, so you will have to play a bit!

What was that you said? Sorry I could not hear you over the awesomeness of me driving the Batmobile. What more do you want to know? Go get the game, it has the Batmobile for you to drive... OK, I suppose Ronnie will discard this article if I don't tell you more.

Now, I have not played this with friends like I used to with Supercars or Micro Machines, I just moved to a new city and have not really made that type of friends. Thus, this article will be based on single-player experience.

I'd like to mention that this project is an ongoing one, and seems to be a labour of love. Unlike 'Real World Racing' – another top-down title I was really hyped for

that died once it went to steam and people paid $15 for it. The developer gives an update every month and it is inspiring to read (https://agateau.com/2022/09-update/).

The music, though fun, needs something, I can't put my finger on it, However, I did not get hearing fatigue like you do on games where the tune repeats ad nauseam. The sounds were also OK, though I would like some things to be a bit more 'punchy'. Now, before I get crucified here, the game is in version 0.23 – nowhere near version 1.0, so things may change in the future and for 0.2 it is more than adequate! If you are a muso, why not offer to help out the guy??

The gameplay caught me by surprise. Unlike the other titles mentioned before, you have no accelerate, only brake (like another title on itch.io called 'HELP, NO

BRAKE', LOL). Firing your weapons also had no brake. You do one action and it completes. This is an interesting mechanism, and one that makes the game a lot more fun. The pickups are sorta crappy crates that litter the track; however, they allow for sprite transitions. Awesome touch! I picked up a crate that had a missile bonus and immediately I had a large red and white missile strapped to my vehicle. Not just overlaid, the surfboards on my roof were replaced by the rocket! I am a big fan of things changing in-game when you do something like don armour, and your character sprite changes too. These are the quality changes that make a game great. Unlike any of the titles mentioned above, the cars in this game are not uniform, You have large pink Cadillacs and skinny rockets too!

The game is written in Java, but the sprites are done in Aseprite

(you can grab a trial version at: https://www.aseprite.org/). You can alter the .ase files with LibreSprite too (https://libresprite.github.io). Let's face it, at the moment, the sprites are a bit weak, so how about you change them to UFO's and have some UFO racing? XD

If you just want to play some now, you can grab it on your phone via F-droid and see what it is about.

If you want to tell us anything: 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.

PATRONS

MONTHLY PATRONS

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