

# The Simple Linux User Guide

Updated October 15, 2026

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## 1. INTRODUCTION

This Guide targets Linux users that “just want to use their apps” and not tinker with their OS. Explanations are brief and simple on purpose. Appendices and links (blue text) to other sources contain more information. Research these and other topics as needed.

The Linux OS used in this guide are image-based Aurora and Bazzite with the KDE Plasma DE. Both can be used for gaming and general desktop use. Bazzite provides optional handheld gaming mode, uses a gaming-optimized kernel, and added tools and drivers specific to gaming. Both OS can automatically update applications and the OS in the background without user intervention.

The manuals for [Bazzite](#) and [Aurora](#) detail most issues that are specific to those image-based OS. Note that some solutions may differ from common mutable OS. For general questions about the DE, apps etc. any general Linux forum can be a first stop after doing research. For specific help, the [Bazzite](#) and [Aurora](#) forum provide expert help specific to these OS.

If a forum (or AI) is used, provide the following relevant information in detail inc. screenshots and other aids:

1. if all software, BIOS etc. are up to date and if system has been re-started
2. what independent research and what attempts at solving the problem have been done and what the results are
3. hardware specifications inc. monitor setup and resolution, CPU, Motherboard, GPU, PSU etc.
4. actual version of OS and apps; point out these are image-based OS
5. error messages, log files, screenshots of the problem

## 2. BASIC SETUP

### 2.1. Installation

Download the iso files for [Bazzite](#) or [Aurora](#) and verify the hash. There is an image selector asking about GPU etc. Hash verification is done by a variety of tools depending on the OS you use. [Burn the image](#) on a good USB flashdrive. Ventoy is not supported.

Remove or disconnect all SSD except the one you want to install the OS on. In BIOS, disable Legacy Boot / CSM and select the flash-drive as boot device. On most PCs that requires hitting DEL, F1, ESC, or F10. RTFM. If the flash-drive is not recognized, try different USB-ports (they do fail!) and/or a different flash drive (those also fail!) and download and burn the image again. Follow the instructions and test the OS in the live environment first. From there, select installation and follow the instructions. Carefully consider the name you give the computer – it cannot be changed without CLI. Remember the password.

If secureboot is enabled, [enroll the key](#) and use password “universalblue”

For dual-booting with W11, the following is recommended:

1. Install each OS on a separate SSD and remove the other SSD when installing each OS.
2. Disable fast startup in BIOS
3. Disable fast startup and hibernation in W11 (Control Panel —> Power Options —> Choose what the Power buttons do —> change settings that are currently unavailable —> Disable “turn on fast startup” and “Hibernate”

### 2.2. Setup After Installation

The very left symbol on the task bar is the application launcher, which is similar to Windows. The icon can be changed. Right clicking the taskbar will let you customize the taskbar and add widgets. Move the application launcher to the center (like W11) by adding spacers, or move the taskbar to the left or right or top of the screen. Try it out and do as you wish.

Right-Click anywhere on the screen and select “Display Configuration” to verify the display resolution and scale. Most monitors should set that automatically. Some older TV or HDMI switches may prevent the required automation. 4K resolution, for example, equals 3840x2160.

Click on bottom-right speaker symbol and set sound output to the actual device.

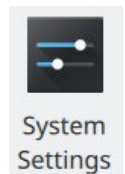


Installation of software is done with [Bazaar](#). This is a flatpak-optimized tool replacing the KDE Discover tool.

### 2.3. Set Personal Preferences

Go to “System Settings” and Search for the key terms. The below are just examples and the user should explore the many adjustment options. KDE frequently adds or improves features.

1. Power Management: disable or control suspension etc.
2. Session: un-check to ask for confirmation on shutdown
3. Screen Locking: set lock screen time longer
4. Keyboard
  - a. Turn on NumLock on startup
  - b. Add Layout to “EurKEY (US)”
5. Cursors: Adjust cursor size (Note that wiggling the mouse will automatically increase pointer size to easily find the pointer)
6. System Sounds: Disable notification sounds
7. Global theme: Theme: Breeze light
8. Sounds: Un-check Audio volume feedback, set volume steps to 2%
9. Right-click on time on task bar -> Configure Digital Clock -> Set “Time Display” to 24-hours
10. Right-click on taskbar for “Panel configuration”
11. Update: set to automatic and daily or weekly
12. Login Screen: Click “Apply Plasma Settings” and “Configure Appearance”



Auto-mount additional Partitions

Unlike Windows, Linux won't automatically mount drives or partitions that are not the main system partition. This needs to be set up manually. Use KDE Partition Manager, un-mount the desired partition and edit the mount point. Check "Don't prevent the system from booting if not mountable" and set up per the instructions.



Mount points can be set up in the home directory and then will be usable by that specific user only. This directory can be created in Dolphin File Explorer. If all users shall have access to that partition, create a folder to mount in `/var/mnt/`. That folder has to be created in the Terminal. The name should be lower case and not include spaces. For example, to create a folder called "data", enter `sudo mkdir /var/mnt/data`. To delete that folder, enter `sudo data rm -rf data`.



The default terminal is "Konsole". But different terminals can be installed.



### 3. ADVANCED USE

#### 3.1. Access Windows Shares

Open Dolphin:

1. Open "Network"
2. Open "Shared Folders (SMB)"
3. Find and open the shared folder, enter and save credentials
4. Right-click on desired folder, and "Add to Places" to easily find later



#### 3.2. Installation and Use of non-Flatpak Software

In rare cases, an application is not available as flatpak and only s available in traditional .deb, .rpm or similar format. In that case, a container with Ubuntu, Fedora or Arch can be created to create an environment for that application.

1. Download .deb and .rpm version of the desired software
2. Use "Kontainer" or "Distroshelf"
3. Create container
4. select base image of a modern distro (Newer Fedora, Debian, Ubuntu or Arch)
5. Update Container. Terminal will open and some input is required
6. Install Package
7. Export application (under applications, select the GUI application you installed). The symbol of that app will show up in application launcher and will work like any app
8. If some features don't work properly (sound etc.), this may be based on an older base image. Try a different base image (or .deb instead of .rpm)



#### 3.3. Read SSD and HDD Health Data

Open the terminal, enter `lsblk` to show the list of drives. SATA drives will be named "sda" and NVME drives will be named "nvme0n1 or nvme1n1" for example. Enter the following command with the above drive name (example nvme0n1): `sudo smartctl -a /dev/nvme0n1` This will show Smart data inc. firmware version



#### 3.4. Firmware Upgrades

Install [Firmware](#) to see which firmware upgrades are available. Note that not all manufacturers support firmware upgrades from within the OS without their proprietary tools. If a firmware upgrade is required, but not offered through "Firmware", research how to do that in Linux or use W11 if available.

#### 3.5. Hide or un-hide Folders

In Dolphin File manager, click Ctrl+H to hide or un-hide hidden folders

#### 3.6. Application Access Rights

By default, many flatpak applications don't have access rights to required directories. For example, a browser may work fine. But if you drag an image to the browser to post on Facebook, it may not work. In such cases open "Flat-seal", choose the app (Browser in this case) and provide it with rights to access the directories the images are in.



#### 3.7. Failed to start modules

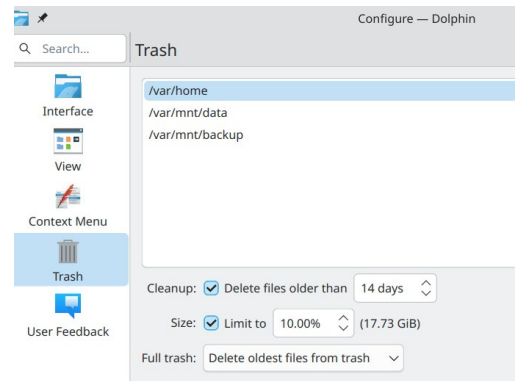
An error indicating modules were not loaded (e.g. failed to start systemd-modules.load.services) may require re-enrolling the secure boot keys. Initiate new enrollment with `ujust enroll-secure-boot-key`

This error can happen if secure boot is disabled and re-enabled.

### 3.8. Clean System

In Konsole, run `sudo just clean-system`

In Dolphin change settings (3-bar menu -> Configure —> Configure Dolphin) Set trash cleaning Settings



## 4. APPENDIX 1 – WHAT IS A LINUX OS?

### 4.1. Linux Operating Systems (Distros)

Examples of Operating System (OS) are Windows, MacOS, Android, iOS, and Linux. They have the following core functions:

1. **Manages Hardware:** It coordinates the CPU, memory, graphics, and storage so that they work together smoothly.
2. **Runs Applications:** It gives apps (e.g. browser) a stable platform to launch and run without crashing into each other.
3. **Allocates Resources:** It decides how and when programs get access to the CPU and memory
4. **Organizes Files:** It keeps track of your folders, documents, and data on your storage drives
5. **Controls Input and Output:** It processes signals from devices like your keyboard, mouse, monitors, and printers.
6. **Protects the Device:** security through user accounts, password controls, and defense against unauthorized access or threats

An OS has a Kernel that interacts with the hardware, and applications. Windows uses the NT Kernel, Mac OS uses the XNU Kernel, and a Linux OS use the Linux Kernel. The Linux Kernel is maintained by the [Linux Foundation](#) and is used on most servers, super computers, IOT devices (e.g. cars, smart TV), Raspberry Pi mini computers, Android devices, and some desktops. The Linux foundation is funded by major technology and hardware companies (e.g. Meta, Google, Microsoft, Samsung). Each maintainer of an OS will alter the Kernel to their needs. The kernel used in a phone will be different from that one used in a server OS or desktop.

Despite being corporate-sponsored, the Linux kernel is free to use and can be modified. A lot of software and OS components follow the [FOSS \(Free and Open-Source Software\)](#) license model. Alternative licenses are the [MIT license](#) or proprietary software.

For hardware, drivers are needed. Those drivers are included in the Linux Kernel (monolithic Kernel). This is as opposed to hybrid kernels (e.g. Windows), where the user (or the OS) includes drivers separately. The monolithic approach is great if the correct drivers are included, because no user interaction is required. In Windows for example, the user is expected to download and install a printer driver from the printer manufacturer website. NVIDIA, for example, is (in)famous for not allowing their drivers included in the Kernel. A good distro will include them. Otherwise, the user has to manually add drivers.

A “Linux distro” is a curated assembly of all necessary OS components including a Linux Kernel. There are [500 maintained distros](#) and they use a variety of versions of the Linux kernel, DE (or none), package managers, and so on. The maintainers of the distro also are responsible for updates, sane pre-configurations, security etc. Distro maintainers also often deliberately add (or don't add) drivers, codecs, tools, and apps. Why are there 500 distros, and not just one good one like for Mac or Windows? Linux is easy to modify and many people have different needs. A distro maintainer could be a large corporation, or a single hobbyist.

A normal user will interact with a Desktop Environment (DE) that will allow display of windows on monitors and also adds multiple GUI tools (i.e. file explorer, software store) for ease of use. It is possible to not use a DE, and only use a Window manager (e.g. i3 or Sway). Older DE (Cinnamon, Mate, XFCE) still use older display protocols (X11) and have a hard time with fractional scaling and mixed monitor setups. Most regular users will want to use a DE like KDE Plasma or Gnome.

Other components of Linux distros include the bootloader, file system, and package manager and many more. Most modern distros will use btrfs (ext4 is an older Linux file system) file system for the OS. Data partitions can use a variety of formats including btrfs, NTFS (Windows format), ext4 (for HDD), exFAT, and so on. For RAID more format options are available.

### 4.2. Where do Applications come from?

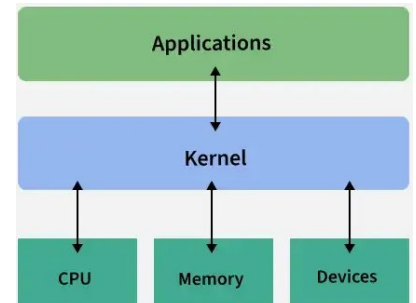
Unlike Windows, where a user downloads an .exe or .msi file, most Linux distros use a GUI software manager. That is similar to an app-store on a phone. That software manager will easily show compatible software the distro maintainers found compatible with their distro.

Software depends on certain dependencies being present in the OS. This is simple in Windows or Mac since those are standardized and a developer targeting those OS can rely on every user having those dependencies installed. Since each Linux distribution can have different packages and Kernels of different vintage, the apps need to be vetted for that specific distro. In traditional packaging formats (such as .deb, or .rpm) a software downloaded from a website, may not work on a specific distro due to missing or outdated dependencies. This limitation is partially responsible for some standard commercial software (e.g. Adobe) not being available in Linux.

To overcome that limitation, containerized formats such as flatpak and Snap were developed. Those include all their dependencies. The downside is slightly more space requirement, which is a reasonable trade-off.

Some applications only exist as Windows or Mac software. If the user needs to use such software, there are the following options:

1. **Compatibility tools like Wine/Bottles or Proton:** for many games and some simpler Windows apps, this can work well



2. Use Windows 11 in a VM: this will require resources, and will have limitations with use of dGPU and other hardware resources
3. Dual-boot or use a separate W11 PC: depending on frequency of use, this can be inconvenient as it requires re-booting
4. Use windows 11 only

Before switching to Linux and picking a distro, research app options and test alternatives. Many Linux apps also have a Windows or Mac version to test beforehand. The user should have an open mind, but should use software and OS they feel comfortable with.

### 4.3. Mutable and Image-based Distro

Most traditional distros (and Windows) are mutable and the user (or software) is free to literally change everything including destroying the OS and all data. App installation will happen in the core system. Mutable Linux OS allow replacement of kernels, DE, and all other components. Any updates will alter parts of the OS. This can lead to users inadvertently compromising their system. Another issue is, each user will have a different OS as soon as they install an app, or edit a configuration. If there is an issue, it is hard to reproduce by the maintainers to possibly fix a bug. This is made worse by the fact that users often depend on CLI (that has no guard rails). In addition, old updates, de-installed software and application data can leave “gruft” in the OS.

Chromebook, phones, or tablet never need their OS fixed. That is because, they use image-based OS. There the core OS is the same for each user and cannot be edited by the user or (malicious) apps. Any update will be a full replacement of the entire image. If a new image fails to boot, the OS will boot in the previous working image. For regular users not needing (or being able) to create their own OS, image based OS will be more reliable and require less setup. The user still can edit the user space (DE, their own data) etc.

Since the core of image-based OS cannot be edited, flatpaks will be used to install software. That way a “bad” software installation cannot impact the OS or other applications. If an app is not available as flatpak, containers can be used. A container basically is a mini-virtualized OS (this could be Fedora, Ubuntu, Arch etc.) that runs the app of your choice and will behave like any other app.

### 4.4. Which Distro to choose? Paralysis by Analysis!

Which of the 500 distros to choose is a common stumbling block for new users. The recommendation of this guide is clear. But users are advised to inform themselves about the alternative options, and try a few distros in live mode. To narrow it down, a user should decide which DE they like most, and what release model (or foundational distro) they prefer.

There are a few distros we ignore outright for this guide (feel free to explore them). Gentoo, Void, Nix, Suse and a few others are tailored towards experts. The three major foundational distributions are:

1. Debian:
  - a. LTS tailored towards stability (little change); New version typically every 2 years with 5 years of support
  - b. Ubuntu is based on Debian (many distros are based on Ubuntu e.g. Mint, Pop-OS!, Zorin)
  - c. Packages can be very old and this is more suitable for servers or desktops with very little need to change
  - d. Pure Debian will need some more setup. MX Linux is based on Debian and will make installation and use a bit easier.
2. Fedora:
  - a. Components will be updated frequently; a new version will be released every 6 months with 13 months of support
  - b. This is good for modern hardware, but not suitable for server use. For desktop use, Fedora strikes a good balance between stability and modernity
  - c. Plain Fedora comes without proprietary drivers or codes and the user is expected to add those.
3. Arch:
  - a. Rolling release with the newest packages. The user is expected to fix problems and to research updates beforehand
  - b. Pure Arch is built by the user from scratch and can contain minimal components or no sane-defaults. For example, a user could build an OS without DE, or Firewall, and may not set up security in any sane way.
  - c. Distros based on Arch (e.g. Cachy, Omarchy, Manjaro) will take care of setup and hopefully provide sane defaults. But the inherent maintenance burden and danger of bugs will be present.
  - d. One claimed advantages of Arch is the AUR (Arch User Repository), where any user can upload software. However, that AUR is not curated or vetted at all and malware or just faulty software can be distributed.

Many distros will be based on the foundational distros and add some conveniences, different DE, more tools etc. In general a distro for regular users should:

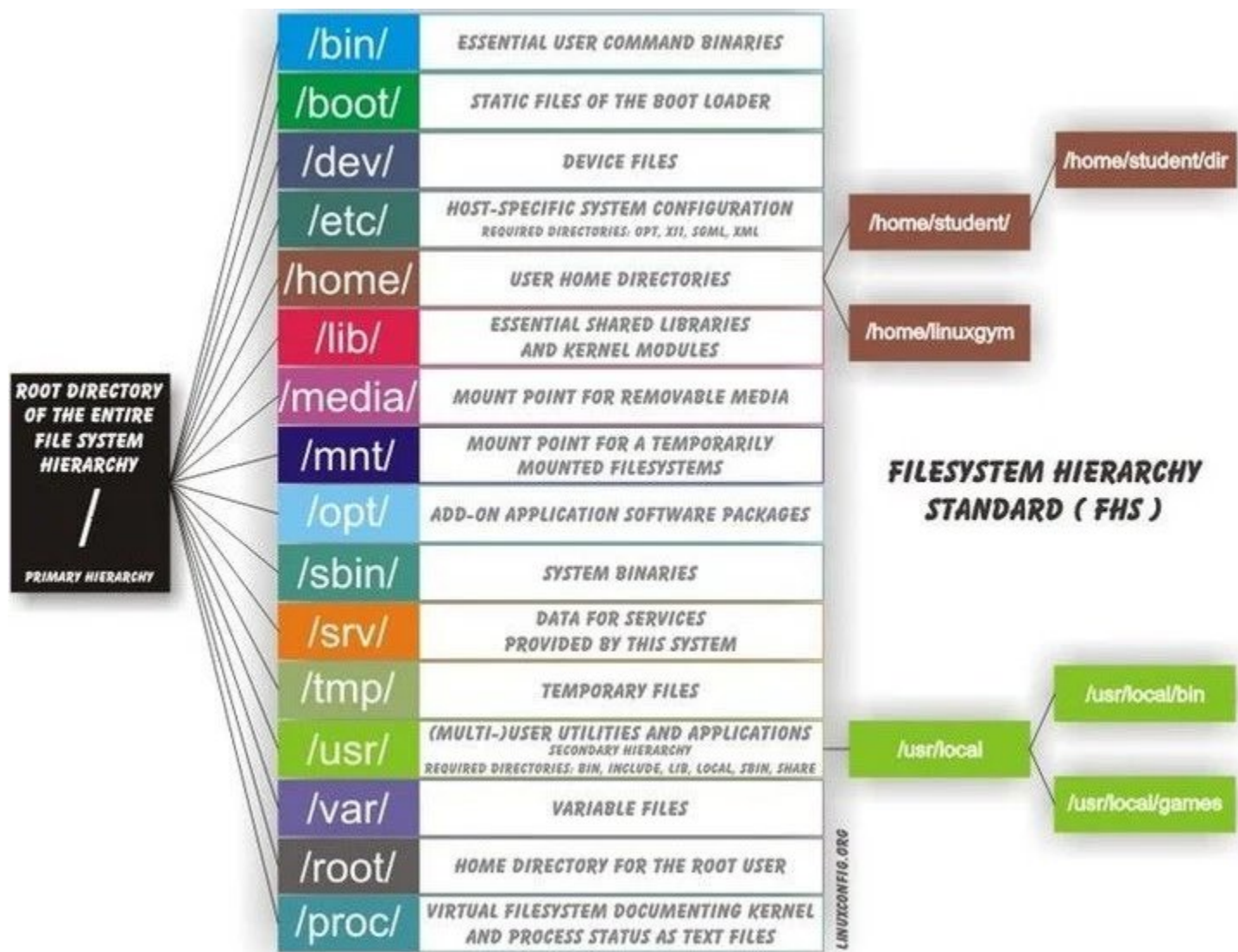
1. have a team with a track record of some years to provide reliable updates and bug fixes
2. be maintained by a larger team with continuation plan.
3. Have good documentation and a active community. Even AI will depend on documentation and discussions it can find.
4. Include required codecs, drivers and quality of life improvements.

The image-based OS we discuss in this guide are based on Fedora (specifically Fedora Kionite). This means, they are based on modern technology, are vetted by large teams and have a good track record. [Universalblue](#) (the creators of the specific images) add drivers, codecs, and other tools to the plain Fedora base. This ensures the user has minimal work to set up and use the OS.

Updates are important because they fix bugs and security vulnerabilities. In addition, new features improve the user experience. Linux on the desktop is relatively new and was reserved for the experts who used the terminal. A distro that frequently updates, will take advantage of new improvements. In addition, new hardware and peripherals and modern software are better supported (or even usable) with modern OS. Therefore LTS distros are less suitable to modern desktop use.

#### 4.5. Linux Folders and Directories

Linux uses a different folder structure than Windows. There is no C-, or D-drive etc. In Linux the term “directory” is used. Everything starts at root `/`. Each user will have their own `/home` directory and won’t have access to other user’s Home directories. Some directories require root access and should not be altered unless the user really knows what they do. In image-based OS, most directories will be read only.



## 5. APPENDIX 2 - SOFTWARE RECOMMENDATIONS

### 5.1. Audio and Video

[Easy Effects](#) is a sound mixer and equalizer

[Strawberry](#) is an mp3 player that actually randomizes playlists

[Kdenlive](#) is a video editor

[PuddleTag](#) is an mp3 file tag editor

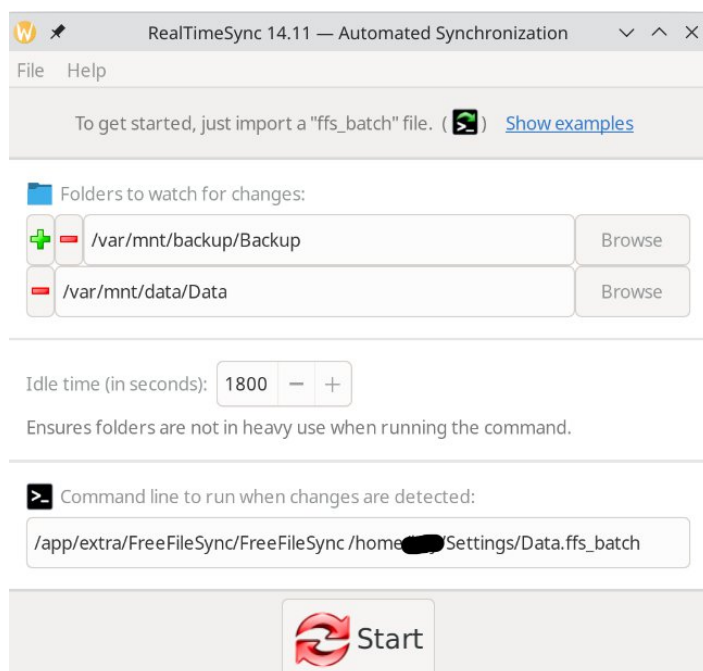
### 5.2. Peripherals

[Solaar](#) provides Logitech peripheral device adjustments. This is somewhat limited compared to their Windows Logitech software

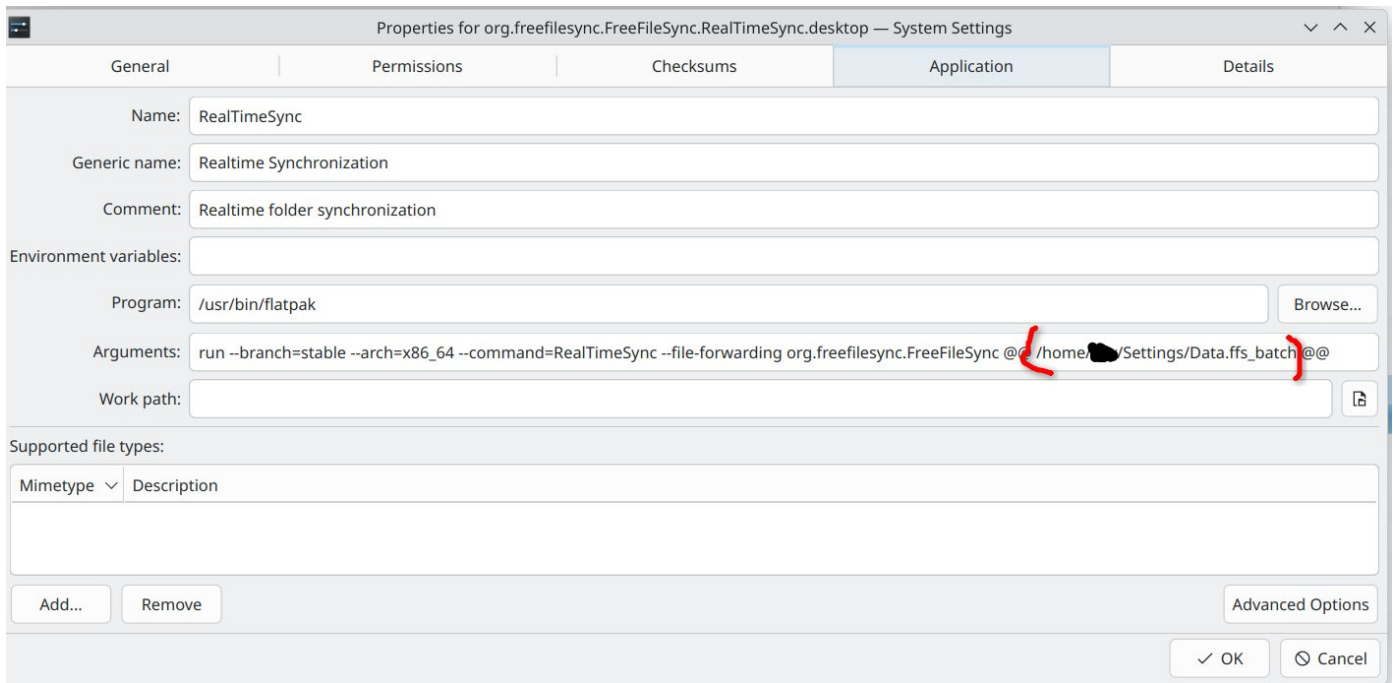
### 5.3. File and Backup

[Syncthing](#) is a file synchronization and backup solution to sync files between different devices inc. phones, Windows, and Linux.

[FreeFileSync](#) is a synchronization tool to sync or backup data locally. Set up the batch job (as detailed in FS guide) and set up RealTimeSync (this is installed as part of FFS):



Set up RealtimeSync in “Autostart” and add the folder with the batch file exactly where marked:

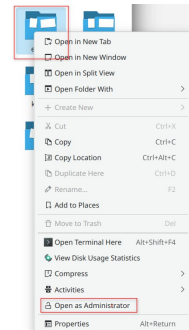


## 5.4. Productivity

[OnlyOffice](#) is an office suite similar to MS Office inc. text editor, spreadsheet tool and PDF editor.

To create a new template:

1. Save document as new.docx in `/var/snap/onlyoffice-desktopeditors/current/usr/share/onlyoffice/desktopeditors/converter/empty/en-US/`
2. Use different directory than `/en-US` if that is not your location or standard
3. You will need to open that directory from one directory above as administrator



## 6. APPENDIX 3 – WHY OR WHY NOT TO USE LINUX

For desktops and laptops, the user has the choice between Windows, Mac, the 500 Linux distros, and even Chromebooks (Chrome OS). Windows and Mac are widely used, have many apps, and are relatively easy to use. Chromebooks are browser-based and will have limited software availability. The proprietary OS will require the user to surrender their data, may cost money, or may have other limitations and planned obsolescence.

The tangible advantages of Linux will depend on the use case, hardware and software needs, and personal preferences. They include:

1. Large choice of distros and DE
2. Many distros can be easier to use than Windows or Mac. This is subjective, of course
3. Privacy is protected better (at least until one visits a website...)
4. No artificial hardware limitations; older hardware often can be used while it is obsolete for the original OS
5. Free (as in beer) and free (as in freedom to alter the OS)
6. Many (often free) apps were created for Linux
7. Some tasks like software development may be better

There are some reason why Linux cannot or should not be used:

1. The user needs Windows or Mac software (e.g. Autodesk, Adobe) not available on Linux. This can be required due to professional collaboration or required features or workflows. Some users may just not want to learn new software.
2. The user is happy with what they have
3. The use case is simple enough for a Chromebook or tablet or similar device to be usable. Linux will be able to do more things than those devices. But if a user doesn't need more, a simpler device can be better.

## 7. APPENDIX 4 - GLOSSARY

|          |                                                                                                                                                                                                                            |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| App      | Short for "Application" or software a user interacts with. This can be productivity software (i.e. CAD, spreadsheet) or tool to work in the OS (e.g. file explorer)                                                        |
| AI       | Artificial Intelligence; often LLM (Large Language Model) will be used                                                                                                                                                     |
| CLI      | Command Line Interface: use of computers by entering commands in a terminal; this often has no guard rails and gives the user more control than a GUI. Use of CLI requires a deeper understanding of how a computer works  |
| DE       | Desktop Environment: a visual software bundle that provides a graphical user interface (GUI)                                                                                                                               |
| Distro   | Short for "Distribution": a Linux OS                                                                                                                                                                                       |
| GUI      | Graphical User Interface: most users familiar with Windows or Mac or any consumer-facing device will use a GUI. It usually is self-explanatory and includes guard-rails to prevent the user from performing unsafe actions |
| LTS      | Long Term Support: OS, components, or apps that will be supported for a long time (often 5+ years) with no new features, but minor bug fixes and security patches. Not all bugs or security flaws may be fixed.            |
| OS       | Operating System                                                                                                                                                                                                           |
| Terminal | An app that allows CLI                                                                                                                                                                                                     |
| UI       | User Interface                                                                                                                                                                                                             |
| VM       | Virtual Machine                                                                                                                                                                                                            |
| W11      | Windows 11                                                                                                                                                                                                                 |