

GRAND PRIX LEGENDS

ON

LINUX



AN EXPERIENCE REPORT WITH TIPS FOR INSTALLATION

BY ALBRECHT KLEINFELD

Version: May 2023

Table of contents

Why GPL with Linux?.....	2
What prior Linux knowledge do I need?.....	3
Which Linux should I use?.....	3
What hardware do I need?.....	4
What works on Linux?.....	4
What restrictions are there?.....	4
How do I install Linux?.....	5
Linux for A GPL SERVER.....	7
How do I install Linux programs?.....	7
How do I keep the system up to date?.....	8
Where can I find the correct graphics driver?.....	8
What do I need Wine for?.....	9
Where can I find my Windows programs?.....	11
How do I start Windows programs with Wine?.....	11
How do I install GPL on Linux?.....	12
How do I install the GEM package?.....	12
How do I install Teamspeak3?.....	13
Do steering wheels work on Linux?.....	13
Is force feedback (FFB) also supported?.....	14
Logitech steering wheels.....	14
Fanatec steering wheels.....	14
Manual installation.....	15
Installation with DKMS.....	17
Thrustmaster steering wheels.....	17
How do I change my steering wheel settings?.....	19
Summary: What is the best way to proceed?.....	19
What alternatives to Linux Mint are there?.....	20
How do I secure my system against data loss?.....	22
Troubleshooting.....	23

WHY GPL WITH LINUX?

The racing simulation Grand Prix Legends (GPL) is originally Windows Software, which is still mainly used by the fan community on Windows computers. However, 25 years since GPL was released, not only the racing simulation but also the operating system environment has evolved.

Windows 98, which was dominant when GPL was released, no longer exists and Microsoft is doing its utmost to make Windows 11 the universally recognized PC standard as soon as possible. However, since Windows 11 as such obviously does not convince all PC owners,



TV view from GPL in the resolution commonly used today

Redmond – as is so often the case – is forced to help with gentle pressure. If you don't want to upgrade to Windows 11, you will face the end of support in 2025.

Some GPL racers may have already made the switch to Windows 11, but many are still hesitating because Windows 11 is not for everyone due to its relatively high hardware requirements and the need to use the Microsoft cloud. As a GPL user, you also have to ask yourself how long Microsoft will be willing to offer the "compatibility mode" for older programs, which is unprofitable for the company. If you don't want to be dependent on Microsoft (any longer), there are plenty of alternatives these days. The open operating systems, based on a Linux kernel in combination with a selection of diverse applications and desktop environments, are essentially an equivalent replacement (even better in some areas). They are available free of charge and can be set up individually for your personal needs without being pressured into using certain products. In addition, the Linux installation routines are now so sophisticated that no Windows user – unless they have unusual special requests – can actually fail during the installation.

Windows 10 was also installed on my GPL computer until recently. At that time I believed - like so many others - that the hardware and software

required for online racing with GPL can only work reliably in conjunction with a Windows system. But now I've dared to switch to Linux and I don't want to go back.

Encouraged by a tutorial by Axel Koch ("Cookie") in the SRMZ forum, I successfully installed GPL on Linux and have been testing it for several months now.

WHAT PRIOR LINUX KNOWLEDGE DO I NEED?

Basically none. At the very least, anyone who can install and configure Windows applications should be able to do the same with Linux programs. Admittedly, there are some fundamental differences between Windows and Linux that can confuse an experienced Windows user. For example, the built-in hard disks (HD) or Solid-State-Drives (SSD) in Linux are not identified by a drive letter, but "mounted" in a directory. You'll also miss a tool for "defragmenting" HDs or search for the virus scanner in vain (neither of which is needed). If you want to delve deeper into the Linux system and get to know the differences to the Windows system, there are numerous websites to discover on the Internet. However, these differences are irrelevant for the installation of a Linux system described here and starting GPL on Linux. At least I hope that the worst pitfalls can be avoided with the tips given here.

WHICH LINUX SHOULD I USE?

Unlike Windows, with Linux you are spoiled for choice. The Linux operating system as such does not exist. There is only one Linux kernel, which is delivered with an individual selection of system tools and application software, depending on the distribution. Every distribution has at least one Linux desktop, which forms the graphical user interface for operating the system (e.g. Gnome, KDE, Xfce , Cinnamon, Mate, etc.).

Assuming that most GPL racers are largely inexperienced in dealing with Linux, I would like to recommend a Linux distribution that I believe is particularly suitable for Windows users: It is **Linux Mint** (LM) in Combination with the desktop **Cinnamon** .

According to the [Distrowatch](#) platform, LM has been one of the most popular Linux distributions for years. Operation is clear, coherent and well documented. The system can be used in a variety of ways and can be easily



adapted to your own needs. And important: From the outside, it is similar to the Windows 10 desktop, so that you can quickly find your way around if you are switching from Windows.

LM is currently available in version 21.1, codename "Vera" and can be downloaded from the [homepage](#) . The download is free, contains no advertising and does not require the disclosure of personal data. Of course, voluntary donations for the work done by the developers are always welcome.

WHAT HARDWARE DO I NEED?

LM does not place any higher demands on the hardware than Windows 10. My GPL computer currently has an outdated quad-core processor from AMD (FX-4300) with a maximum clock frequency of 3.6GHz. The equally outdated mainboard is equipped with 8GB of DDR3 RAM and the graphics are provided by a fanless GForce GT1030. This means that GPL and all other applications run absolutely smooth.

WHAT WORKS ON LINUX?

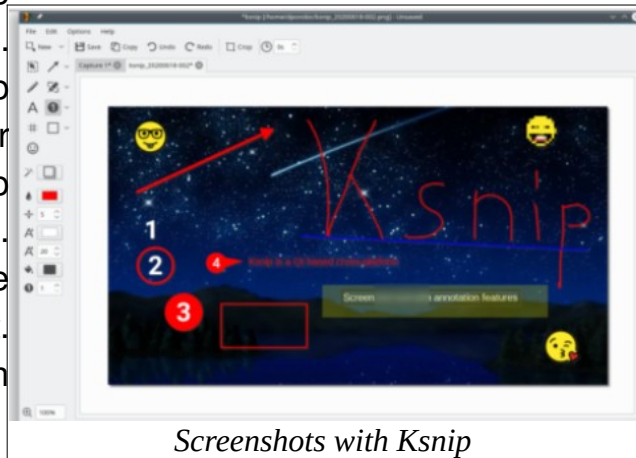
GPL and all additional programs required for online racing (GEM, Igor, Replay Analyzer, Setup Manager, Teamspeak, etc.) can be installed and uninstalled as usual per mouse click. This also applies to all addon tracks and mods. Packing and unpacking files in all formats works with a click directly from the file manager. With Linux's own tools, screenshots can be created and saved to all common formats. Images and other data can be conveniently uploaded to a cloud of your choice and synchronized with other computers using clients specially provided for Linux, such as Dropbox or Mega. Teamspeak3 can also be installed and used just like on Windows.

WHAT RESTRICTIONS ARE THERE?

There are only a few programs that a GPL racer might have to do without. One of them is **VROC**. The program can be installed, but - despite the appropriate configuration - fails when accessing the GPL directory. The

omission of VROC should be bearable, however, since Igor has now firmly established itself as an alternative platform. Igor can be used on Linux without any problems.

Another tool that one has to live without under Linux is **Fraps**. However, it should be possible to replace it, at least in part, with other Linux-compatible programs. I like to use Ksnip for my screenshots. Unlike Fraps, Linux programs are not limited to the BMP format. Replays can be video recorded in real time with OBS Studio.

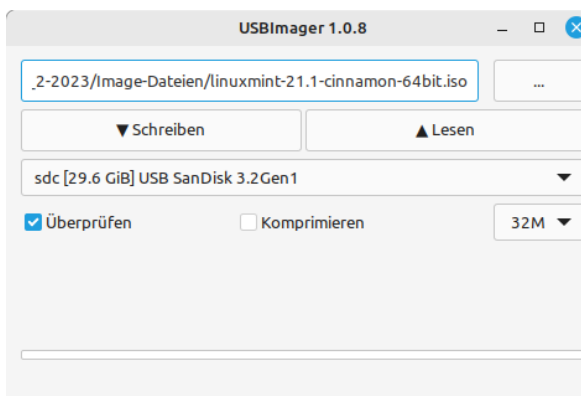


Screenshots with Ksnip

More serious, because they cannot be compensated for in individual cases, are some limitations that exist when supporting steering wheels. This applies in particular to the use of force feedback (see below) and the options for configuring steering wheel settings (see below).

HOW DO I INSTALL LINUX?

You can either burn the LM ISO image to a DVD or transfer it to a USB stick. To set up a USB stick as the start medium for installing LM, you may use the



Setting up a USB boot medium with USB Imager

Windows tool [USB Imager](#), which is freely available on the Internet.

Usually, the computer starts the system from the internal HD/SSD specified in the BIOS. Therefore, if the system is to be loaded from a USB stick or a DVD, you'll have to change the boot order. On older computers, you can use the Del key to enter the BIOS. With newer mainboards with UEFI-BIOS you have to press a

function key (e.g. F2, F8 or F11) after switching on. In UEFI BIOS there is a selection menu in which you can directly select the boot medium that is plugged in or inserted.

After loading the live system from the start medium - the loading process may take a little longer - the Cinnamon desktop should appear with the optimal screen resolution. The system can now be tested at your leisure without anything being written to the HD/SSD.

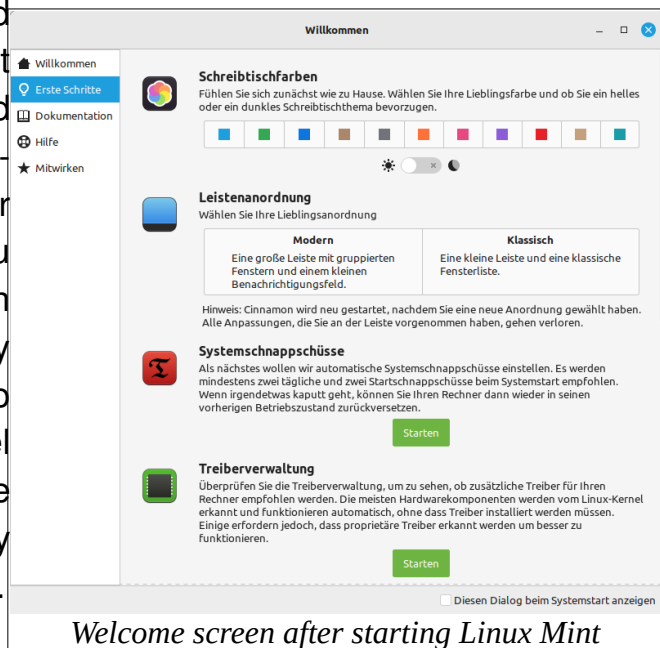
Before installation, you should know whether you want to run the PC exclusively with Linux or whether you want Windows to remain on the same harddrive as a second system. While Linux can be easily installed alongside Windows, it is easier and less risky for a beginner to install both systems on separate HDs/SSDs. In order to rule out serious data breaches from the outset, it is best to disconnect the cable from the Windows HD/SSD beforehand. In a second slot you should now have plugged in another HD/SSD for the Linux installation that does not contain any important data. Click on "Install Linux Mint" to start the installation program.

There are a few requests to be answered during the installation. If there is neither another system nor other important data on the HD/SSD, you may accept the default, which results in the entire HD/SSD being formatted (erased!) and used for the Linux installation.

You can go on without many of the options offered during installation (eg. encryption, installation of codecs, login at every start). However, other information must be provided. For example, the name of the computer (as it appears in the home network), your own username and a password must be entered. The password does not have to be complicated if you only want to use the computer locally for yourself. However, you should definitely remember this, because it is asked for every time you log in and every command that requires administrator authorization.

The installation process takes around 10-15 minutes if you don't use a particularly fast SSD. After a reboot (now without installation medium) LM should boot from the HDD/SSD. If the system does not start, it could be because the BIOS is missing the removed USB stick. In this case, the boot order in the BIOS should be checked and changed back if necessary.

If the Linux system is recognized in the BIOS, you can reconnect the previously disconnected HD/SSD with the Windows system if necessary. After switching on the computer, you then have the choice of which system you want to use. This may be necessary, for example, to update the steering wheel firmware, since the software supplied by the manufacturer only runs under Windows (see below).



After starting LM for the first time, a welcome screen appears with useful information and links for further system setup. Further information, including post-installation, can also be found on the homepage.

LINUX FOR A GPL SERVER

If you only want to run GPL in server mode on Linux, you don't actually need a HD/SSD for the installation. In this case, LM can also be installed on a USB stick with at least 32 GB RAM . The prerequisite for this is that the stick has a persistent memory area on which the required GPL programs, server settings and tracks can be permanently saved. You can set up such a USB stick with persistent memory using the [Unetbootin](#) tool .

HOW DO I INSTALL LINUX PROGRAMS?

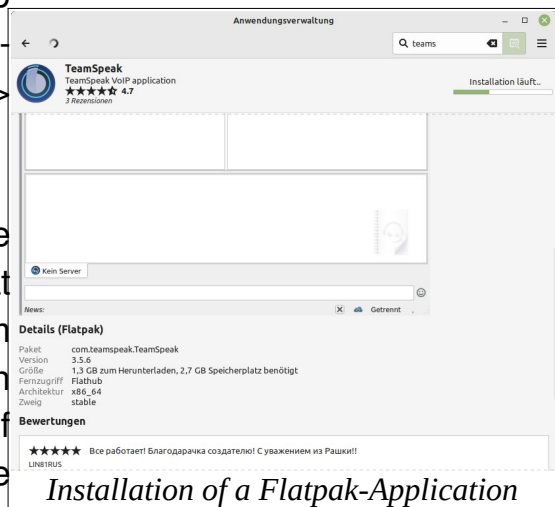
During the installation of the system, numerous application programs are installed that are usually useful when working with a PC (office, internet, graphics, multimedia, etc.). If this is too much for you, you may delete it without leaving any residue .If the programs provided are not sufficient to you, you may install and try out other programs as you wish in System Management ->Application Management. The known Windows problem of a system becoming slower due to many installations and deinstallations does not exist on Linux.

HOW DO I KEEP THE SYSTEM UP TO DATE?

All system and installed application programs receive prompt updates via system management -> update management. The frequency of the updates and other options can be set up individually under System administration -> Update management -> Edit -> Settings.

In the software management some of the programs are offered as flat packs. Flat packs bring their own system environment with them and therefore run independently of the system libraries of the distribution. The disadvantage here is that flat packs require a larger data

volume and therefore require longer download times for updates. If you don't have an internet connection that is too fast, you should consider before installing whether you can do without Flatpaks. With many programs in the application software, you have the choice of using the Flatpak (Flathub) or the lean system package.



To speed up download processes in general, you can select from a large number of mirror servers in the system management -> applications package sources the one that has the highest download rate for your

own location.

WHERE CAN I FIND THE CORRECT GRAPHICS DRIVER?

Both the manufacturers and the Linux developers provide graphics drivers for all common graphics cards and chips. However, the open-source graphics drivers supplied as standard with Linux (they are called "nouveau" on Nvidia

cards) are only sufficient for normal desktop operation. In the case of programs with demanding 3D graphics, drivers that are specially tailored to the graphics chip installed in the graphics card must be installed later.

If you are using a graphics card with an Nvidia graphics chip, the appropriate drivers are automatically offered after you call up System Management -> Driver Management. The driver marked as "recommended" in the list can usually be installed without hesitation. If this does not work well after the restart, older drivers from the list may also be tried. However, you should have made a backup of the system beforehand.

AMD-Radeon graphics cards or AMD processors with integrated graphics are also well supported by Linux. Depending on the graphics chip used, the appropriate modules integrated in the kernel (radeon or amdgpu) are activated. Additional drivers to improve 3D capabilities are not usually required, but may be downloaded from [AMD](#) if required. A kernel update can be beneficial when using newer AMD graphics chips. However, you should always wait until the new kernel is offered for download by the update management. Kernel 5.15 is currently still used in LM. Some other Linux distributions already use the 6.2 kernel. This is not yet offered for installation by LM (update management -> view -> Linux kernel) . Therefore, one should be careful when obtaining the latest kernel from sources on the Internet and installing it on one's own responsibility. You should have checked beforehand whether a kernel update for your own AMD graphics card will result in any improvement at all, which can be read [here](#), for example.

WHAT DO I NEED WINE FOR?

Wine is the link between Linux and Windows. Many Windows programs can be run on Linux with the help of [Wine](#). Wine is not an emulator. Therefore, Windows programs that are started using Wine run without any loss of performance. Unfortunately, not all Windows programs can be run with Wine. Some can be started, but do not run error-free.

The development of Wine has been worked on intensively for years. Companies are also involved who use a modified version of Wine for commercial purposes (e.g. Valve, who, in cooperation with CodeWeavers, uses the Proton version of Wine for its Steam games platform). Nevertheless: Not every development progress represents an improvement for every

Windows program. Sometimes it can happen that a program that worked well with an older version of Wine suddenly has problems with a newer version. Unfortunately, GPL is such a program.

Wine is not automatically included after the installation of LM, but must be installed afterwards. Installing Wine can be done very easily through the application manager. Various versions are currently offered in the application management. But not every version is suitable for GPL. As already mentioned above, with the latest version (Wine-stable, currently 8.0.1) GPL does not start correctly. The Replay Analyzer also refuses to work with Wine-Stable. Therefore, installing the latest version is currently strongly discouraged.

Wine
Windows API implementation - standard suite

Installieren

Details

Name: **wine**
Version: 6.0.3~repack-1
Größe: 188,0 MB zum Herunterladen, 1,1 GB Speicherplatz benötigt

Bewertungen

Systempaket

★★★★☆ 4.0
818 Bewertungen

★★★★★ 345
★★★★ 250
★★★ 126
★★ 50
★ 47

[Webseite](#)

The Wine 6.03 package is available in the application management of LM.

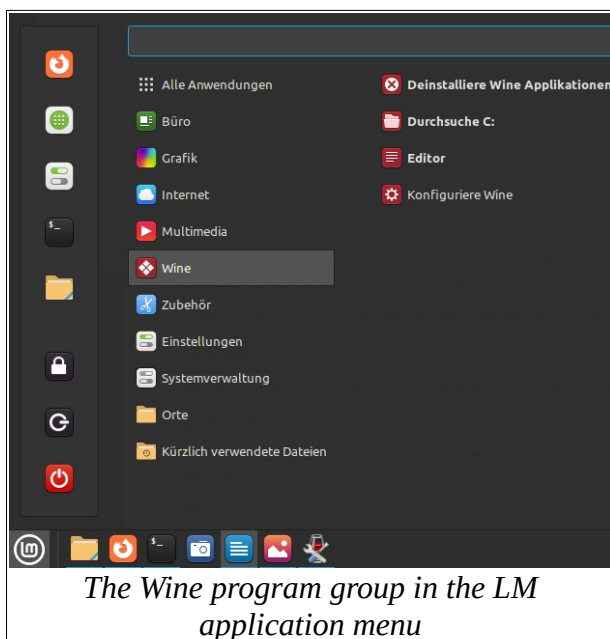
On the other hand, version 6.0.3, which is also offered in the application management, works perfectly with GPL and all other GPL programs. Only

this version should therefore be installed. Version 5.0.3 offered in the application administration can be ignored for GPL.

WHERE CAN I FIND MY WINDOWS PROGRAMS?

In Linux - as in Windows - every newly installed program is listed in the application menu. This does not apply to Wine, because Wine is not an independent application, but a Linux command that provides a so-called compatibility layer for running Windows programs. The Windows programs installed with Wine are usually displayed with an icon on the desktop.

However, there is no corresponding program group in the application menu. In order to have these programs displayed in the application menu, you can install the small program "Wine-desktop-files" from the application administration. All Windows programs set up with Wine are then listed in the "Wine" group.



The Wine program group in the LM application menu

Installed Windows programs can also be started in the file manager with a double-click. However, the exe files are initially not visible in the file manager because they are stored in a hidden folder (.wine). Hidden folders can be made visible either with the file manager (right-click in the home directory -> "Show hidden files ") or with the keyboard shortcut "Ctrl"+"h". In principle, all folders created by Wine below ".wine/drive_c" correspond to the directory tree of Windows 7. When

running Windows programs, the "drive_c" folder is displayed as drive letter "C:". Therefore, with every program installation in which the GPL directory is asked, the path "C:/Sierra/GPL" - as with Windows - can be entered or searched for and selected. However, the "dosdevices" folder also set up by Wine can be ignored.

HOW DO I START WINDOWS PROGRAMS WITH WINE?

There are several ways to start Windows programs with Wine:

- in the terminal, e.g. with the command "wine gplc67.exe"

- in the file manager with a double click on the file name or
- on the desktop with a double click on the program starter (if available).

A program starter is usually automatically placed on the desktop if you have previously installed the Windows program with the associated Setup.exe and activated the "Create a starter" option. If an additional link without a graphic icon appears on the desktop, it can be moved to the recycle bin.

HOW DO I INSTALL GPL ON LINUX?

There's not much to say about installing GPL on Linux: it works the same way as on Windows. If you've already set up an installation that works on Windows, it's particularly easy. In this case, you can copy the entire "Sierra/GPL" folder from the Windows installation to the drive_c folder.

If you don't have a working GPL installation at hand, you can install the entire GPL environment from scratch. To do this, start the [GPLPS installer](#) - as described in the ["Easy Installation Guide"](#) by Stefan Roess - by double-clicking and carry out the installation process - just like on Windows.

HOW DO I INSTALL THE GEM PACKAGE?

Unlike with GPL, you should not copy and paste the "GPL-Secrets" directory created by GEM on Windows into the drive_c folder. In this case it is better to set up GEM from scratch. One of the advantages of installing using Paul Thurston's [setup](#) file is that the familiar icons for GEM+, Igor and the Setup manager are saved to the desktop as starters.

As recommended for Windows, the GEM package should not be installed in the Sierra folder, but directly under drive_c or "C:" according to the standard specification. After installing GEM, some post-processing still needs to be done. When started for the first time, GEM initially refuses the language setup because the "GEM.ini" file created by the setup does not work in the Linux environment. This error can easily be remedied by deleting the GEM.ini. The GEM.ini generated by the setup is not in the "GPL-Secrets" folder - as one might assume - but in the "C:/ProgramData/Documents/GEM+/" folder or in "C:/Users/Public/Documents/GEM+". If you start GEM again afterwards, a new GEM.ini will be created, which then will work.

Finally, all patches that were previously stored in the "Options" folder can be copied into the new "Options" folder. In order for Igor to find the racelist, you

still have to enter the currently valid IP address in the igor.ini. This is as of now IP=igor.gaiztor.com. The [Replay Analyzer](#) in version 7.9 by Jonas Matton and Martin Granberg can also be installed later by starting the setup file. Here, too, a program launcher should appear on the desktop after installation.

HOW DO I INSTALL TEAMSPEAK3?

The Teamspeak client can be installed in three different ways under Linux:

- In the application management of LM, the current version is offered as a flat pack. This requires 648 MB to download and 1.9 GB on the HD/SSD (see above) . This type of installation should be carefully considered if there is little storage capacity or low bandwidth.
- The Teamspeak [download area](#) offers packages for both Windows and Linux. The Windows version can also be used under Linux and can be easily installed with Wine. A program starter stored on the desktop is also included .
- The Linux version, on the other hand, does not come with a program launcher and is therefore less convenient to use.

As with Windows, the hardware for Teamspeak sound is automatically recognized and activated. This applies to most internal sound chips and sound cards as well as headsets that are connected via an external USB sound adapter.

Setting up hotkeys is not a problem, at least on the keyboard. However, activating hotkeys on the steering wheel is not possible with all steering wheels. With the Thrustmaster T300RS, for example, no hotkey can be assigned on the steering wheel for "Push to talk".

DO STEERING WHEELS WORK ON LINUX?

Most steering wheels, probably all, work under Linux at least in the basic functions. These are recognized by the kernel as a joystick or gamepad and can accordingly implement all axis movements and button presses on the steering wheel in the programs.

IS FORCE FEEDBACK (FFB) ALSO SUPPORTED?

The FFB effects can also be used with most PC-compatible and high-quality steering wheels. However, the driver software required specifically for Linux is not provided by all manufacturers. Experienced programmers from the Linux community have developed kernel modules , some of which are equivalent, for steering wheels that are supplied by the manufacturer without a Linux driver. FFB is supported for the following steering wheels:

LOGITECH STEERING WHEELS

FFB works out of the box on most Logitech steering wheels. The necessary drivers are already implemented in the newer Linux kernel. Owners of a Logitech steering wheel of the type

- Driving Force GT,
- Speed Force Wireless (no 900 degree rotation)
- momo,
- Wingman Formula Force GP,
- G25,
- G27,
- G29
- G920 or
- G923 (from Linux Kernel 6.3)

should therefore have no problems with FFB support. The list may not be complete. The new "Pro Racing Wheels" from Logitech may also work. Before purchasing a new steering wheel, you should definitely check the status of Linux support by researching it on the Internet.

For some Logitech steering wheels (not for G920 and G923) there is an additional kernel module ([new-lg4ff](#)) on Github for post-installation, which should improve the FFB properties in some points. It is possible that this module is no longer required as of kernel version 6.3.

FANATEC STEERING WHEELS

The following steering wheels and pedals by Fanatec can also be driven with FFB effects under Linux:

- 0EB7:0E03 FANATEC CSL Elite Wheel Base
- 0EB7:0005 FANATEC CSL Elite Wheel Base PS4
- 0EB7:6204 FANATEC CSL Elite Pedals

The drivers offered by the manufacturer can only be used on Windows. Fanatec currently doesn't offer Linux-specific drivers . However, the programmer Matthias Gorzelli has developed an equivalent Linux driver for the steering wheels mentioned above , which can be obtained free of charge from [Github](#). Installation instructions are included in the readme. The manual installation suggested there ("Compile and install the driver") should not pose a problem even for a Linux beginner:

Manual installation

First you get all the files required for the installation on the local HD/SSD. Cloning the data from Github is done using the git command. Since the git command is not included in LM, you have to install it afterwards. The easiest way to do this is in the terminal. The terminal icon can be found in the bottom bar of the desktop on the left-hand side. After calling up the terminal, enter:

```
sudo apt install git
```

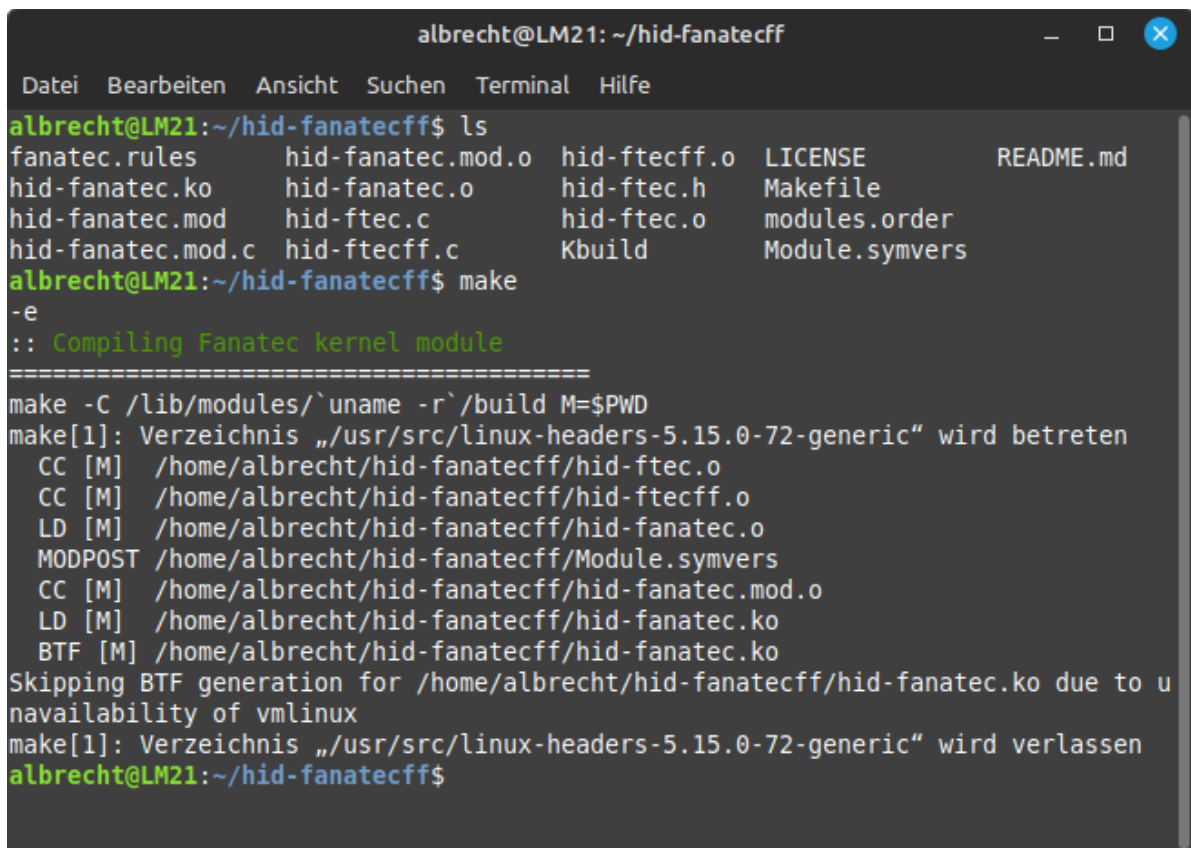
Incidentally, all commands can be copied from this description or from the readme and pasted into the terminal with a right click. You can save yourself the hassle of copying the commands . All commands that you have entered are saved in the so-called "history". These can be retrieved from the history with the two arrow keys up and down, changed and – if desired – executed again with the Enter key.

The prefix "sudo" must also be entered if the following command (like here "apt") requires admin rights. In these cases, you will be asked for the password you chose during installation. Then the cloning can be started with the command:

```
git clone https://github.com/gotzl/hid-fanatecff
```

Since this is a pure copy process that leaves the system untouched, a sudo with password prompt is not required. The downloaded installation files should now all be found in the "home/(user)/hid-fanatecff" directory.

Two commands then must be entered in the terminal for the installation. However, these are only executed if you are in the installation folder when entering the command, in this case in the "hid-fanatecff" folder. The path you are currently on is displayed in the terminal prompt. To navigate in the directory tree you can (like in the old DOS) use the commands "cd" and "cd .." to move up and down. By entering "ls" (corresponds to "DIR") you can



```
albrecht@LM21: ~/hid-fanatecff
Datei Bearbeiten Ansicht Suchen Terminal Hilfe
albrecht@LM21:~/hid-fanatecff$ ls
fanatec.rules      hid-fanatec.mod.o  hid-ftecff.o  LICENSE      README.md
hid-fanatec.ko    hid-fanatec.o     hid-ftec.h    Makefile
hid-fanatec.mod  hid-ftec.c        hid-ftec.o    modules.order
hid-fanatec.mod.c hid-ftecff.c      Kbuild       Module.symvers
albrecht@LM21:~/hid-fanatecff$ make
-e
:: Compiling Fanatec kernel module
=====
make -C /lib/modules/`uname -r`/build M=$PWD
make[1]: Verzeichnis „/usr/src/linux-headers-5.15.0-72-generic“ wird betreten
CC [M] /home/albrecht/hid-fanatecff/hid-ftec.o
CC [M] /home/albrecht/hid-fanatecff/hid-ftecff.o
LD [M] /home/albrecht/hid-fanatecff/hid-fanatec.o
MODPOST /home/albrecht/hid-fanatecff/Module.symvers
CC [M] /home/albrecht/hid-fanatecff/hid-fanatec.mod.o
LD [M] /home/albrecht/hid-fanatecff/hid-fanatec.ko
BTF [M] /home/albrecht/hid-fanatecff/hid-fanatec.ko
Skipping BTF generation for /home/albrecht/hid-fanatecff/hid-fanatec.ko due to u
navailability of vmlinux
make[1]: Verzeichnis „/usr/src/linux-headers-5.15.0-72-generic“ wird verlassen
albrecht@LM21:~/hid-fanatecff$
```

display the contents of the respective folder.

However, it is easier with the file manager: First select the target directory "hid-fanatecff" and with a right-click select the option "Open in terminal". After that, a new terminal window will open with the command prompt already in the selected directory. Here then are the two commands

```
make
sudo make install
```

entered and confirmed one after the other. The driver module is now implemented in the kernel and is available after restarting the computer.

The driver installed in this way is permanently linked to the respective kernel version. This means that if the kernel is replaced as part of a regular system

update, the driver is lost and the installation must be repeated as described above. However, this can be prevented. Before each update, the update management shows which programs and libraries will receive an update. It is also displayed whether a kernel update is pending. If you don't want to install the driver later, you can click on the check mark in the "Update" column to exclude the kernel (or another module) from the update.

In addition, you can set the update management so that kernel updates (as long as you want) are generally prevented. You can display the current kernel version with System Management -> System Reports -> System Information.

Installation with DKMS

In addition to the "manual installation" mentioned, another programmer offers a package for installing the same driver using a dkms command. DKMS stands for Dynamic Kernel Module Support and is generally preferable to manual installation. Unfortunately, the developer failed to include an install script suitable for beginners with his package. When you start entering the command without the necessary preparations

```
sudo dkms install dkms.conf.m4 -m hid-fanatec-dkms -vr56.0e56c48
```

you just get an error message. In view of this, the manual installation with "make" seems to be easier here for once.

THRUSTMASTER STEERING WHEELS

The manufacturer also does not offer any Linux drivers for activating FFB effects on the Thrustmaster (TM) steering wheels. The standard module in the Linux kernel only activates a centering force, which increases the steering resistance when cornering.

To activate the FFB effects implemented in the steering wheel, drivers are currently available for four different TM models (T150, T150RS, T248 and T300RS). Further drivers for steering wheels from TM are to follow.

Dario Pagani (aka "scarburato") has developed a driver module for the T150 and T150RS steering wheels. The files to install the module can be cloned on [Github](#) using the git command (like Fanatec, see above). Installation instructions are included in the readme.

Another programmer (nickname "Kimplul") wrote a driver program for the TM T248 and T300RS steering wheels. This is also available on [Github](#). The git

command is also used here for cloning, which may have to be installed later, as described above. Start the cloning process with the command:

```
git clone --recurse-submodules https://github.com/Kimplul/hid-tmff2.git
```

After that, the installation can either be done manually - as with the Fanatec steering wheels - or with the help of the dkms command. The use of the dkms command has the great advantage that the driver module is also automatically inserted in the new kernel with future kernel updates. A subsequent installation is therefore not necessary.

It is also important here that you are in the newly created installation directory "hid-tmff2" when entering the command. The best way to switch is to use the file manager ("Open in terminal" option), as described above. Then you can run the installation script.

```
sudo ./dkms-install.sh
```

You should have unplugged the USB cable from the computer to the steering wheel first. After restarting the computer, the FFB effects can be felt in the steering wheel.

But beware: Kimplul's driver module only seems to work to a limited extent with GPL in combination with the T300RS. The FFB effects are very well implemented and driving is really fun with them. But based on my experience on my PC, the driver seems to be the cause of frequent system crashes. The crashes occur completely unpredictably when driving in GPL and can therefore not be reproduced. I reported the problem to the developer, but he couldn't find any abnormalities in the system journal, see [here](#). Since the system crashes initially only occurred when using AMD processors from the Athlon II X2 series and after installing AMD processors from the FX series (FX-4300 and FX-6300) I didn't have a crash for several days, I thought so to have solved the problem with replacing the processors. However, it has now been found that the crashes continue to occur. In order not to take more risks in future online races, I removed the Kimplul driver with the command

```
sudo dkms remove -m "hid-tmff2" -v "0.8"
```

from the kernel. As far as I know, the problem has not occurred with other racing simulations. From this one could conclude that this is an error that only occurs when driving with GPL. Unfortunately, the exact cause of the crash could not be determined because a crash report is not available.

HOW DO I CHANGE MY STEERING WHEEL SETTINGS?

The configuration programs supplied by the manufacturers only run under Windows. They cannot be used with Wine on Linux.

Only the game controller known from Windows 7 is also available under Linux. To do this, enter the command in the terminal

```
wine control
```

With most steering wheels you can at least check the functioning of the steering and pedals as well as the button assignments. With the steering wheels from Logitech, the FFB effects can also be simulated and checked.

Other settings of the steering wheel can be changed with the Linux program [Oversteer](#), as long as this is supported by the modules maintained in the driver .



With many steering wheels, you can change the most important settings without configuration software. For example, the rotation angle of the TM T300RS, which is preset to 1080 degrees by default, can be changed manually by pressing two buttons on the steering wheel. The key combinations are described in the manual.

If necessary, all other settings can only be changed using the manufacturer's configuration software. For example, to update the firmware in the T300RS or to calibrate TM's LMC pedals, the Windows system must be briefly reactivated. A Windows 10 is therefore on my second HD and can be selected if necessary for the system start during booting. The corresponding selection menu is automatically displayed by Linux ("Grub") when two or more systems are found on the connected HD/SSD.

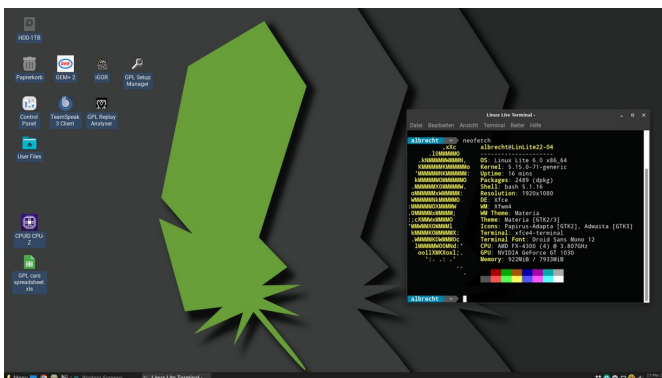
SUMMARY: WHAT IS THE BEST WAY TO PROCEED?

The sequence of steps to be taken could look like this:

- Installation of the Linux system with an USB stick or a DVD as installation medium
- Installation of all updates with the update management and, if necessary, upgrading the system to the next higher version
- Installation of the appropriate graphics driver if not already done during the system installation
- Install Wine 6.0.3 from Application Manager or with Synaptic
- Create the .wine directory by typing any Wine command (eg winecfg) in the terminal if required
- Install GPL from scratch or paste a working Sierra/GPL folder into the .wine/drive_c directory
- Installation of GEM+ (including deleting the first GEM.ini)
- Installation of Replay Analyzer
- Installation of Teamspeak3 if desired
- Installation of additional steering wheel drivers if required

WHAT ALTERNATIVES TO LINUX MINT ARE THERE?

In principle, GPL can be used with any Linux distribution. However , there are distributions that are not necessarily based on the needs of a typical Windows user. Therefore I would like to recommend two other distributions in addition to LM, which are equally suitable for setting up a Linux computer with GPL.



Linux Lite 6.0 with Xfce-Desktop

LM, be supported with security updates until 2027. Because of its Xfce desktop, the distribution is comparable to Xubuntu, but - in my opinion - much better equipped. I installed Linux Lite on my second computer and successfully tested it together with Wine 6.0.3.

The [Linux Lite 6.0 distribution](#) is a good alternative. It is particularly suitable for computers with older hardware and little memory, but this is not obviously seen. The system is based on Ubuntu 22.04 LTS and will therefore, like

Another very good alternative is the Ubuntu derivative [Ubuntu Mate 22.04](#) . The desktop looks very tidy and can be easily and versatilely adapted to one's own habits.



Ubuntu 22.04 with Mate-Desktop

Wine cannot be found directly in the application software, but you can install it very easily in the terminal with the command:

```
sudo apt install wine
```

With the further command

```
wine --version
```

make sure that you have the right version, namely 6.0.3, on your HD/SSD.

Sometimes the Wine directory is not created directly, only if you enter any Wine command; this can be done, for example, with the command

```
winecfg
```

which starts a small program for configuring the Windows environment created by Wine (normally not needed for GPL). At the same time, a "Wine" group is created in the application management menu, in which all future installed Windows programs can be found. The appropriate driver for Nvidia graphics cards can also be found in Ubuntu Mate under Settings -> Additional drivers.

In the file manager of Ubuntu Mate, the start of Windows programs via double-click is initially not supported. However, you can create this option yourself by right-clicking on the Windows program -> Open with -> Other application -> Custom command -> Select Off (until you find "wine" in the list) -> Confirm.

Conclusion : Even if a few additional steps are required to set up the system, Ubuntu Mate 22.04 proves to be very convenient afterwards and should therefore definitely be considered as an alternative to LM.

Two other distributions I otherwise had a very good impression of, cannot be recommended for a GPL installation. First there is the Linux distribution [Zorin OS 16.02](#). In the practical test, Zorin OS did not meet the expectations in relation to GPL. Although the Winepackage 6.0.3 and the appropriate graphics drivers are easy to install, it is unfortunate that no starter icons appear on the desktop after the installation of Windows programs. With Zorin OS 16.02, launching GPL is therefore only possible with the file manager or from the application menu.

The flaws in the original [Ubuntu 22.04](#) (with Gnome-Desktop) are even more serious. Although the current LTS version of Ubuntu forms the basis of the distributions mentioned above (LM, Linux Lite and Ubuntu Mate), it is not even suitable for installation with GPL because the Wine package 6.0.3 is not available here. It is not included in the application software, nor can it be installed using Synaptic.

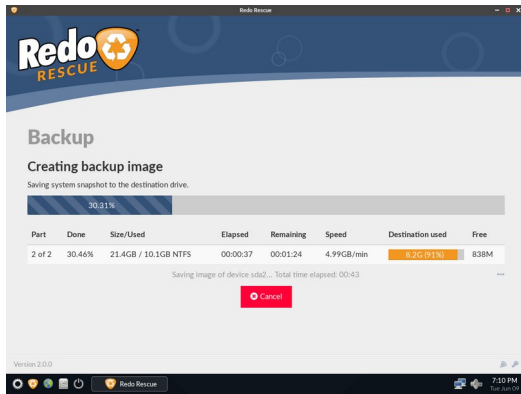
The **intermediate versions** of Ubuntu (Ubuntu 22.10 or 23.04) should generally not be selected for a GPL installation either, because support with security updates is limited to 9 months. Other than that, they don't contain any GPL relevant improvement compared to the older LTS version (Ubuntu 22.04). The installation of the Wine package 6.0.3 is also not possible with the intermediate versions.

From this follows: In principle, it does not matter which Linux distribution you choose. For the functioning of GPL and simple operation, however, the following criteria should at least be met:

- Access to the Wine package 6.0.3
- Access to the appropriate driver for the graphics card
- Starter icons on the desktop
- Start by double-clicking in the file manager

HOW DO I SECURE MY SYSTEM AGAINST DATA LOSS?

Usually, installing Wine, a graphics driver, or a kernel module cannot damage the Linux system. Nevertheless, caution is advised, particularly for Linux beginners, when making changes or trying out drivers that you don't know how to remove afterwards. When trying out a graphics driver that is not recommended, it can also happen that it is no longer possible to restart the computer (black screen).



In such cases, it is important to make a backup copy of the working system beforehand. Easy-to-use tools are available for this in the form of [Clonezilla](#) or [Redo](#).

TROUBLESHOOTING

The boot medium created with USB Manager 1.0.8 is not recognized by the BIOS.

This may have different causes. Sometimes it's the USB port, then changing the plug could help. If possible, only such USB ports should be used that are led out from the mainboard on the back of the computer. Wired ports (hubs or front panels of the PC) are often not suitable. USB3 sticks also sometimes work more reliably when connected to an USB2 port. Sometimes it is also the USB stick itself, which should then be replaced.

After leaving the GPL program, the desktop does not appear in the normal 2K, but in the VGA resolution (640x400) of the GPL menu.

The graphic error occurs when using Wine-stable (version > 8.0). In these cases a downgrade to Wine 6.0.3 package is necessary. In order to be able to continue working temporarily (without restarting), the original 2K resolution can be restored by logging off from the desktop (key combination: Ctrl-Alt-Del). Wine package 6.0.3 can be installed from the application software or with Synaptic. An existing Wine installation must first be removed. Uninstallation can also be done with the application software or with Synaptic. If Wine 6.0.3 was installed as a "package", future Wine updates will be ignored. Working older Wine versions are therefore retained after a system update.

The Replay Analyzer v.7.9 starts with a black window.

This graphic error also only occurs when using Wine stable and can be fixed by downgrading to Wine package 6.0.3.

GEM does not start correctly (does not continue after language selection).

The "GEM.ini" file generated during installation must be deleted. This is located in the "C:/ProgramData/Documents/GEM+/" or "[C:/Users/Public/Documents/GEM+](#)" folder. After calling GEM again, a working GEM.ini will be created automatically.

The option "Open with Wine Windows program launcher" is not offered in the file manager.

The option mentioned is not usually included in the file manager, but is only added as an extension when you install Wine. Alternatively, if this option is missing, "Open with rundll32" can be made the default: Right-click on ?? .exe -> Open with -> Other application -> rundll32. If also "rundll32" is not listed in the application list, the entry of "wine" can be used as a custom command (see Ubuntu Mate above).

