

The state of gaming on FreeBSD

Thibault Payet

- FreeBSD user since 9.2
- Port maintainer since 2016
- Mainly a C++ developer, and occasionally a python developer

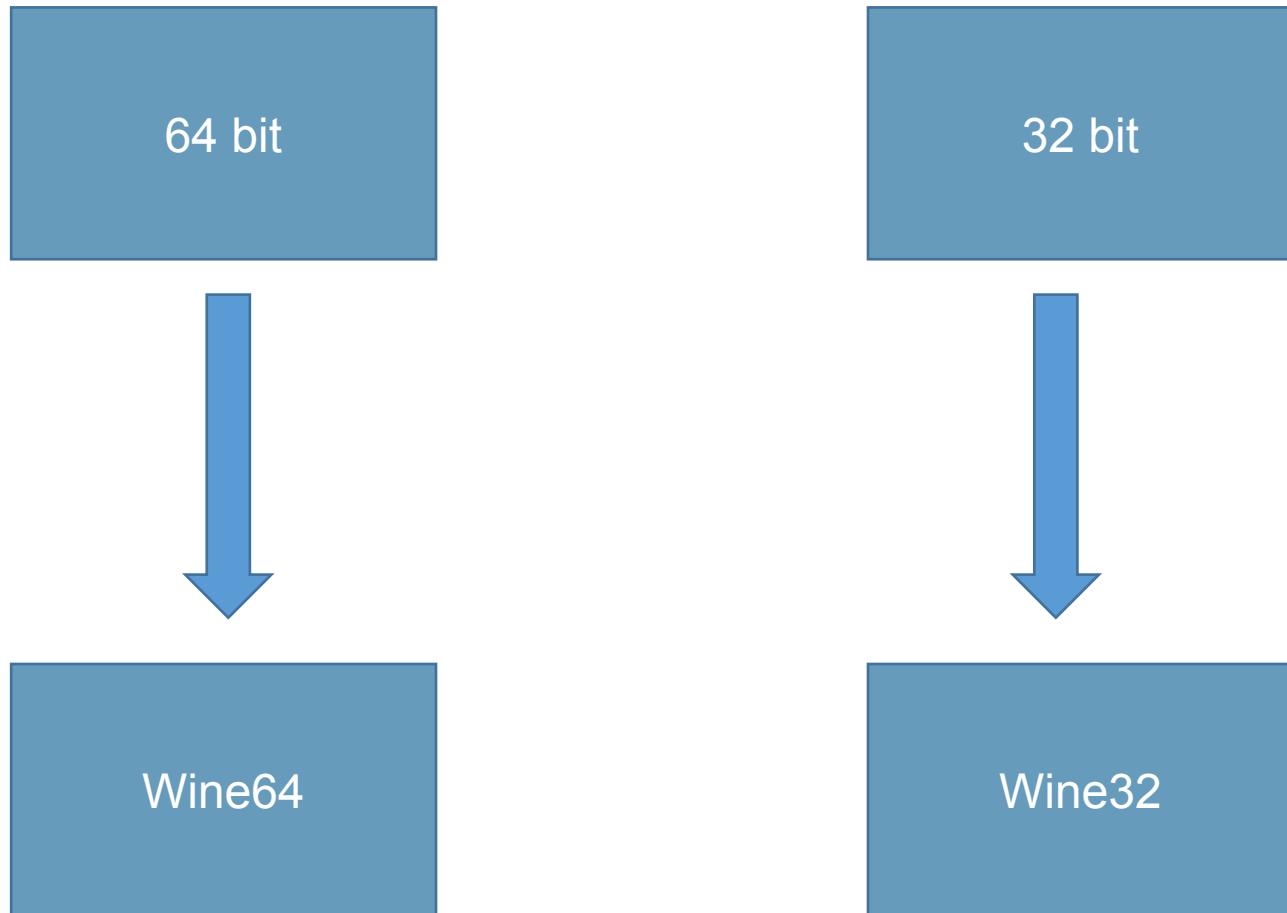
1. Wine gaming
2. Linux gaming
3. Linux Steam Utils gaming
4. Gaming on bhyve

Wine gaming

wine (stable) - 10.0

wine-devel (development) - 11.1

wine-proton - 9.0.3



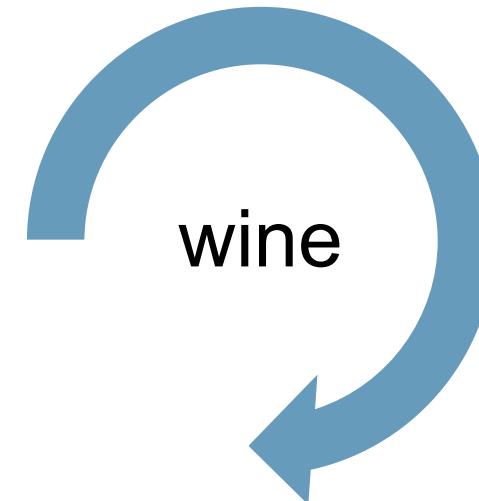
64 bit + 32 bit



Wine64 + Wine32

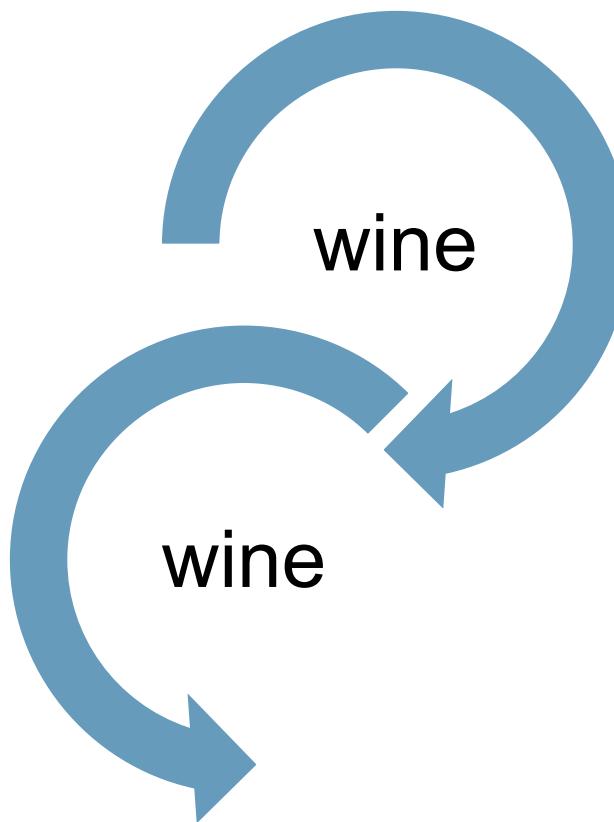
/usr/local/bin

Shell script



/usr/local/bin

\$HOME/.i386-wine-pkg/**/bin



Shell script

Shell script

/usr/local/bin

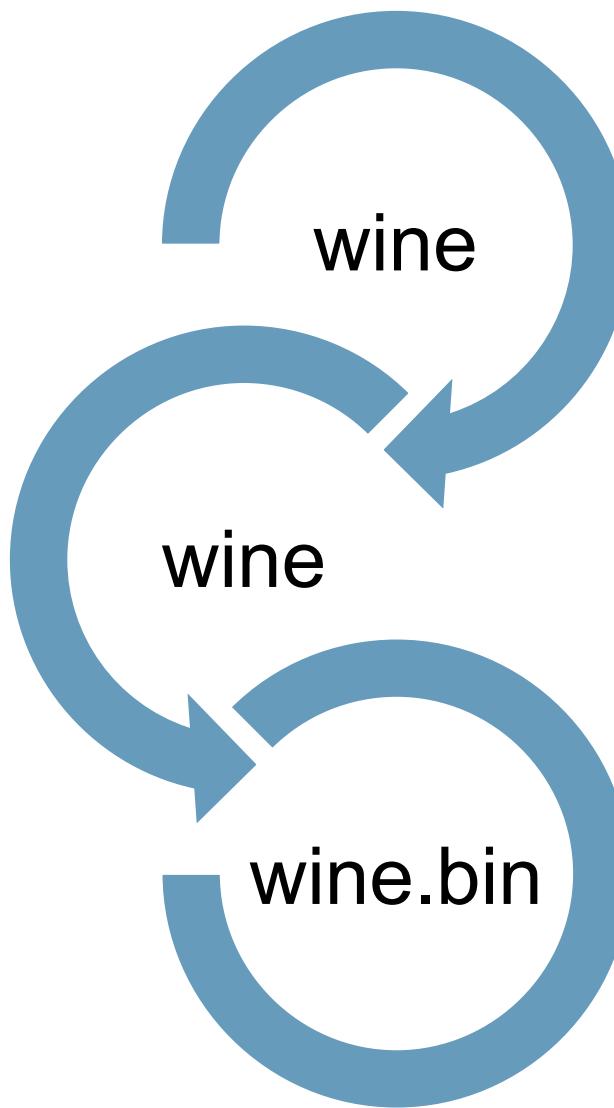
\$HOME/.i386-wine-pkg/**/bin

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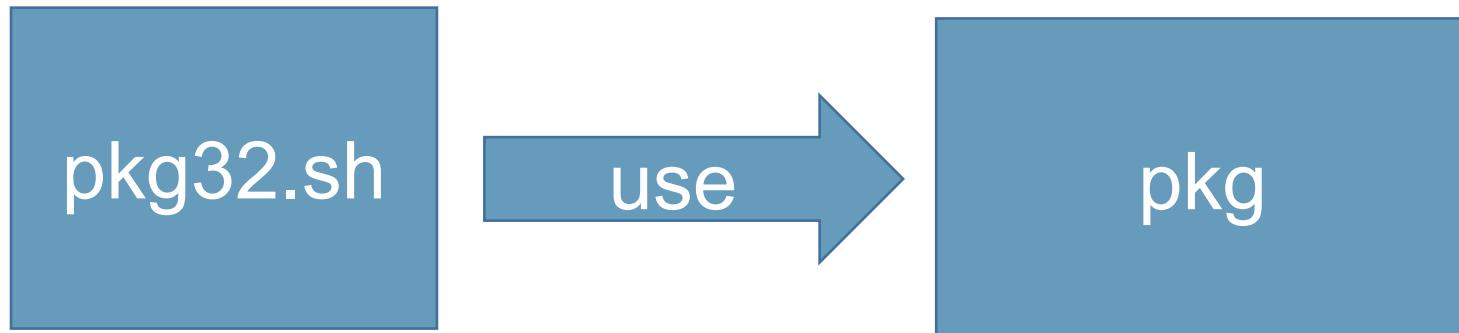
Shell script

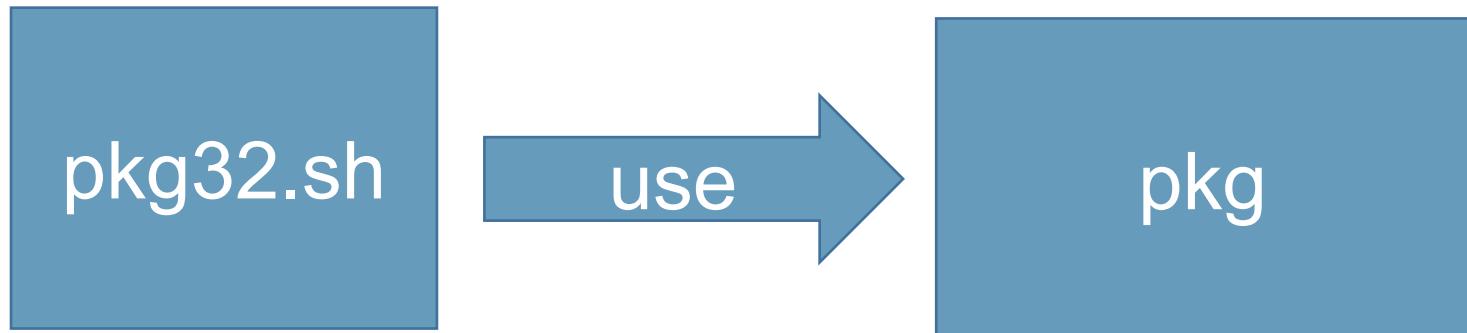
Shell script

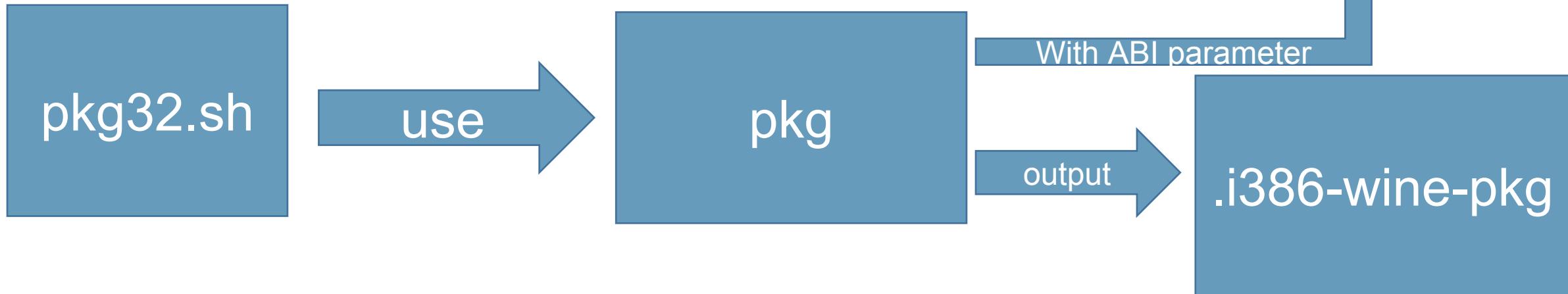
Binary executable

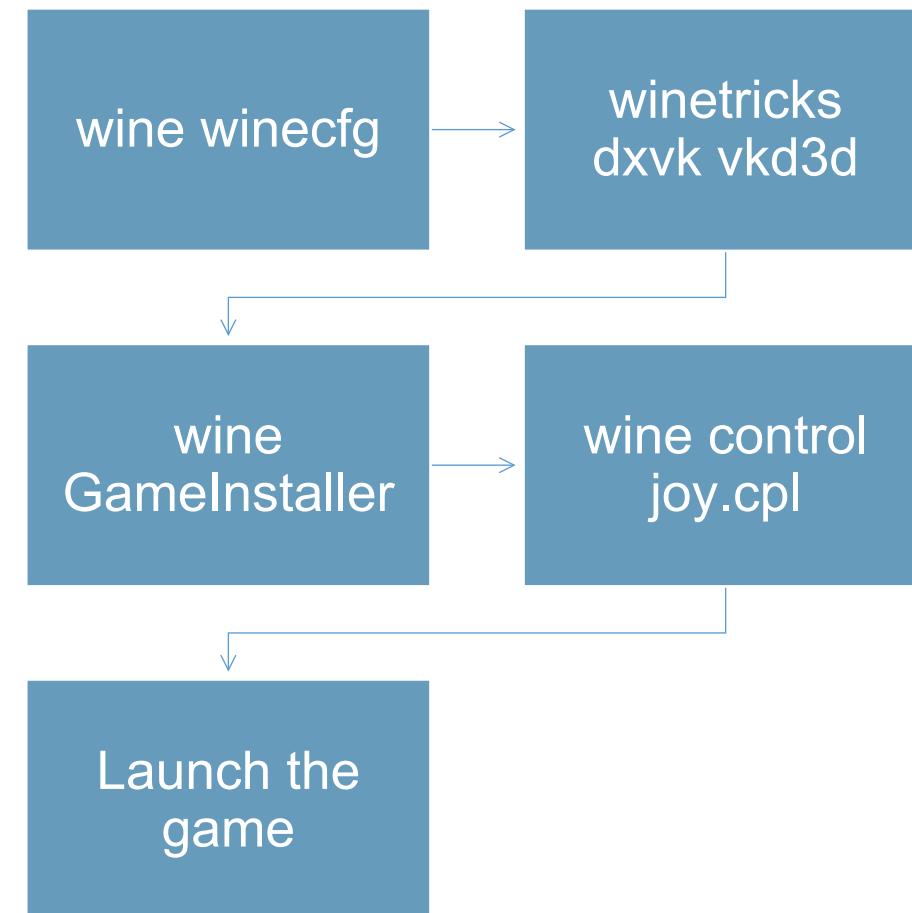


pkg32.sh

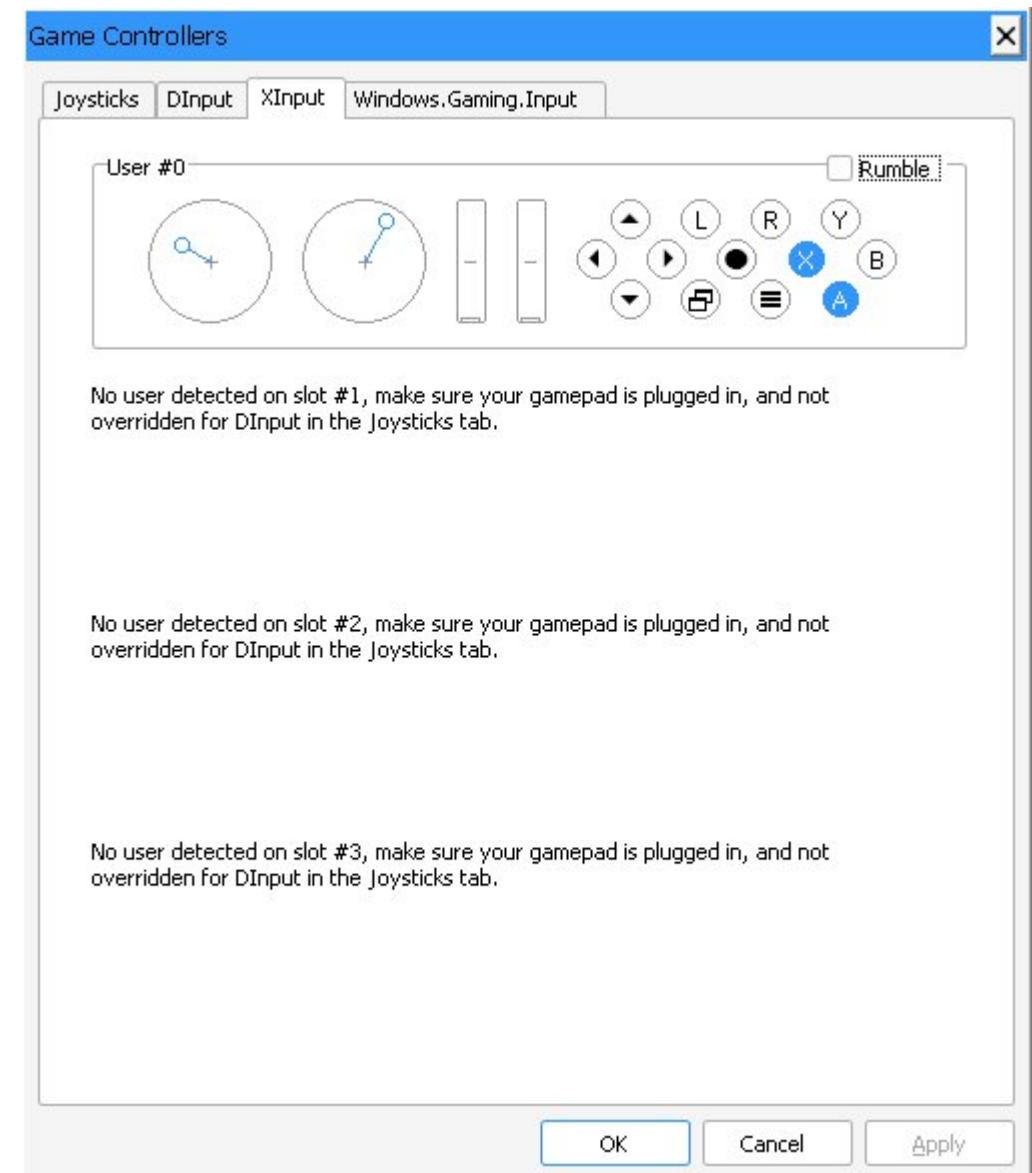
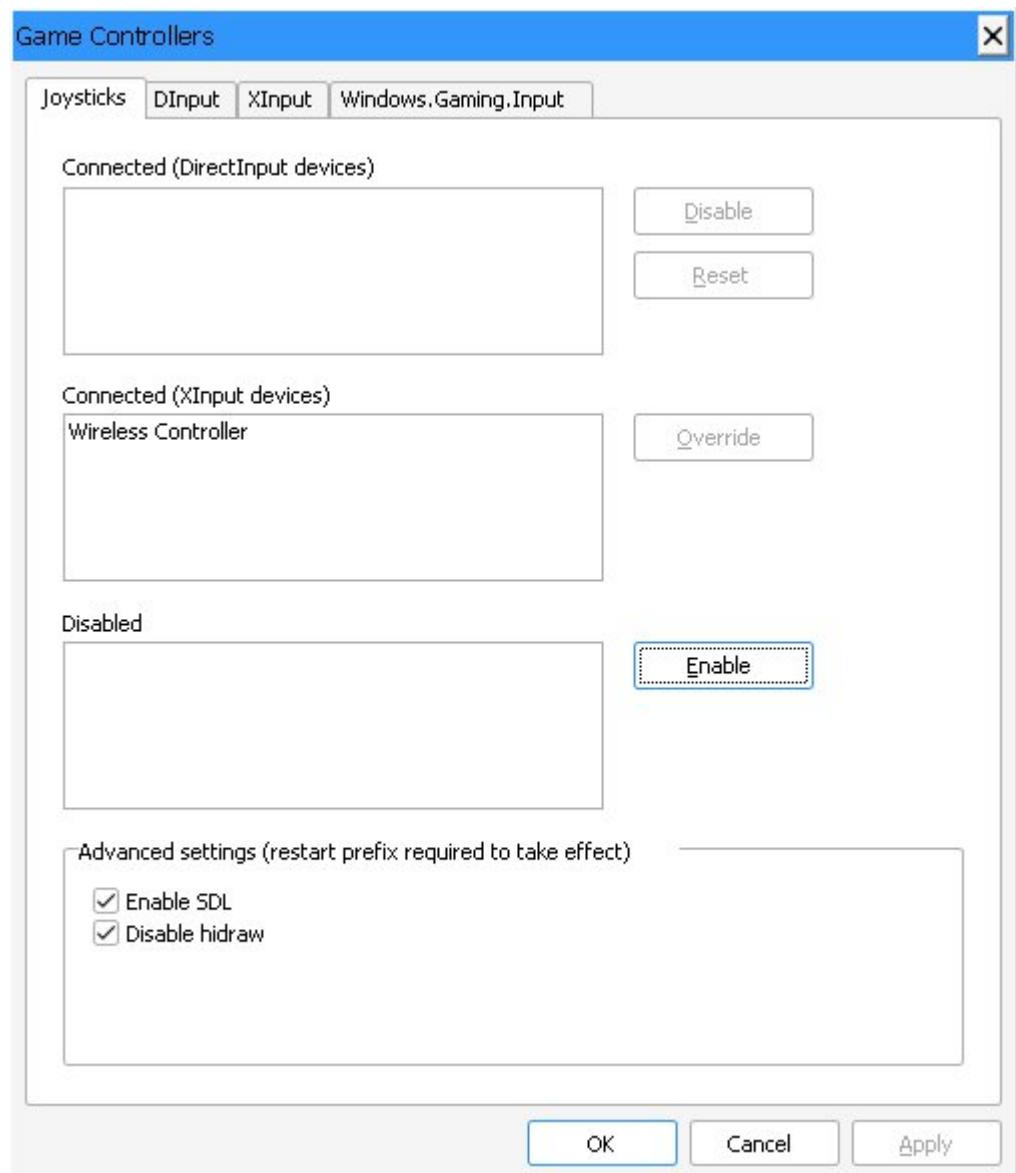


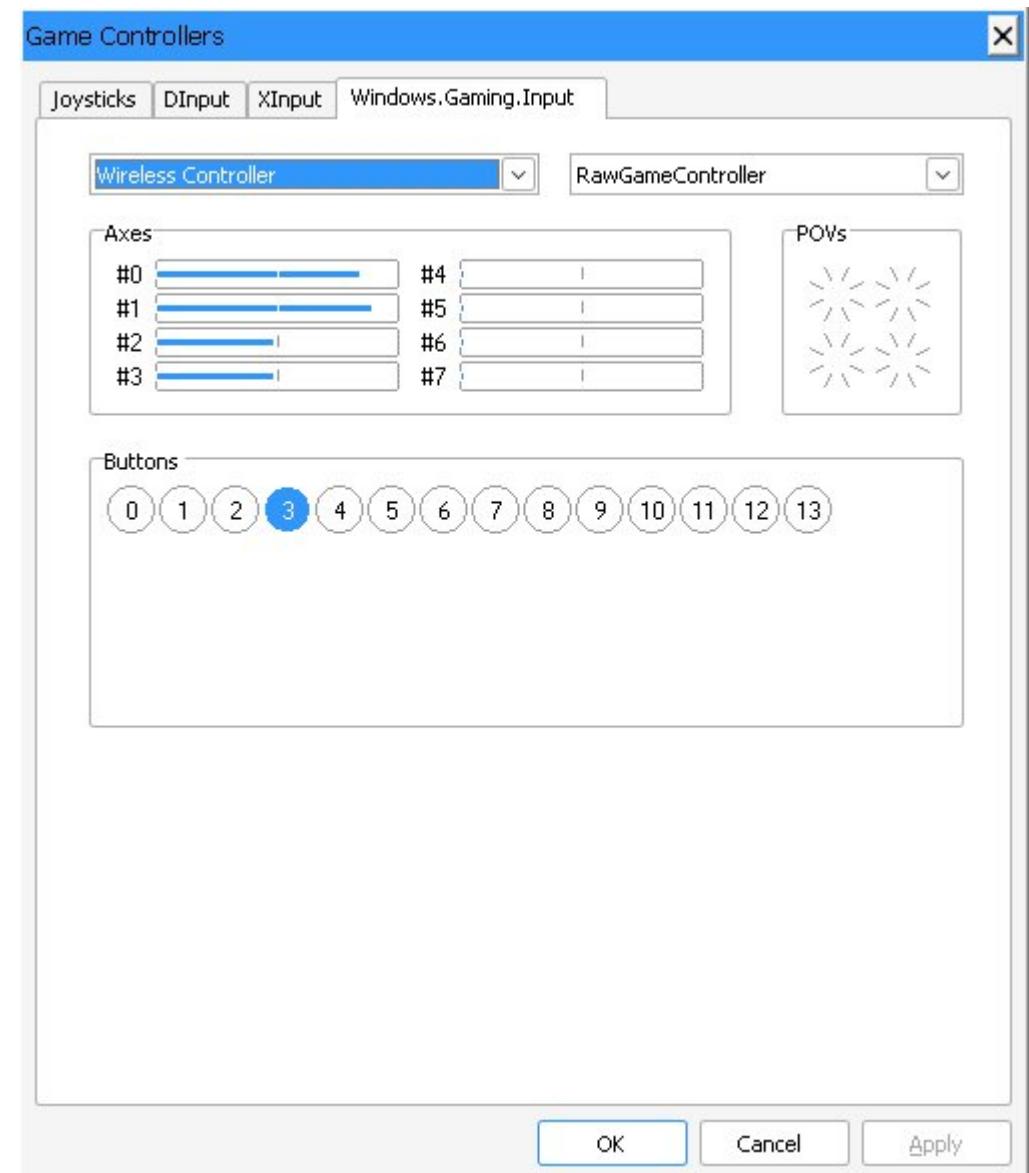
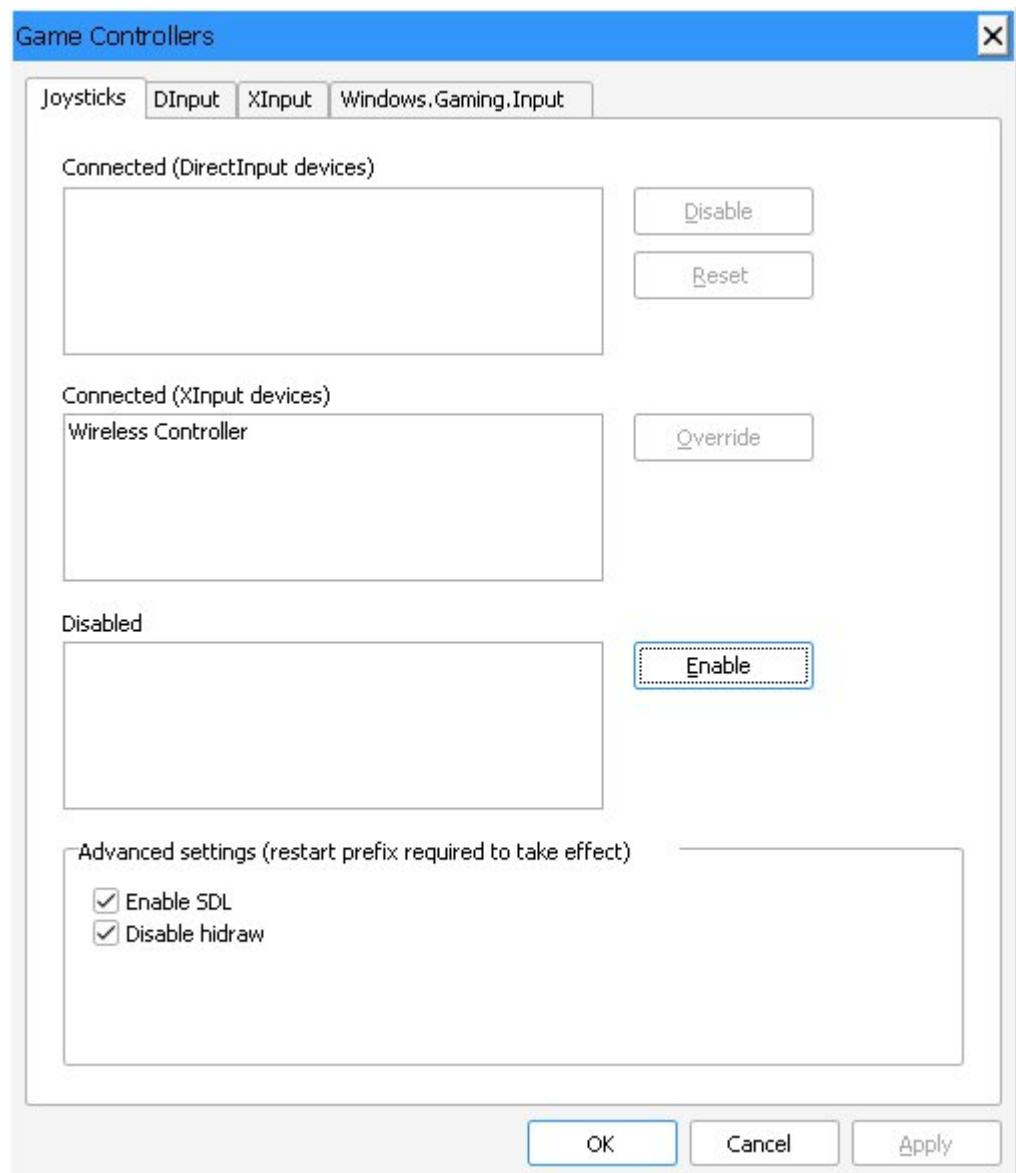














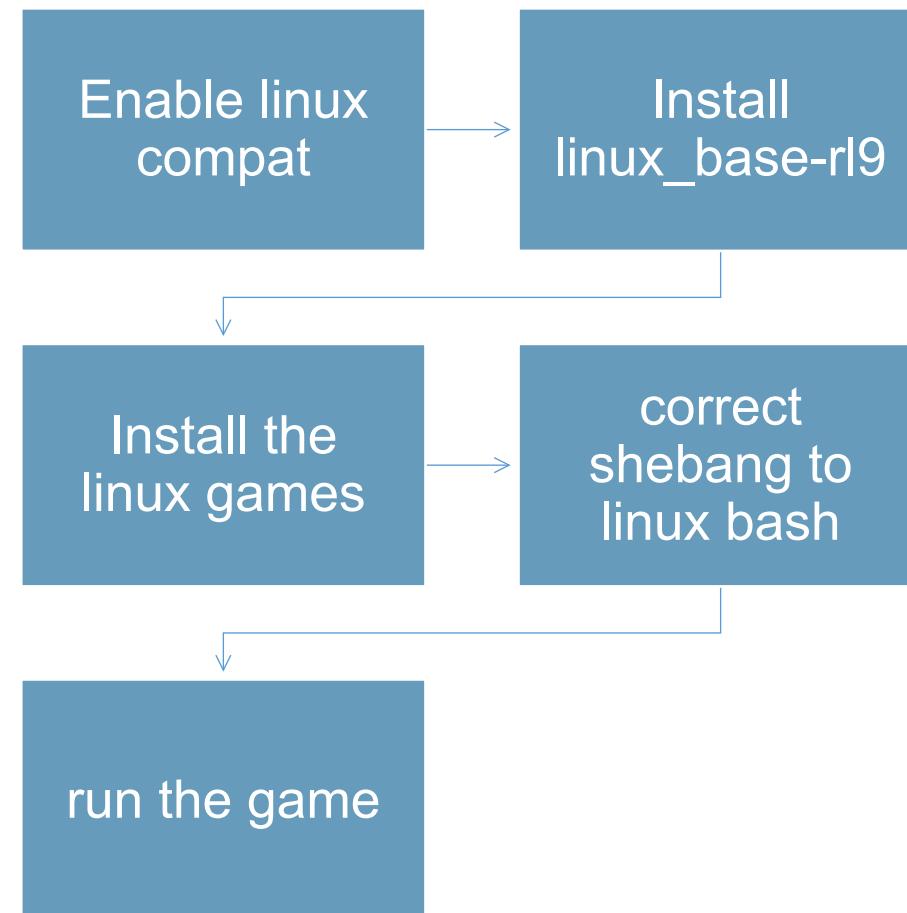
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Linux gaming



Nvidia

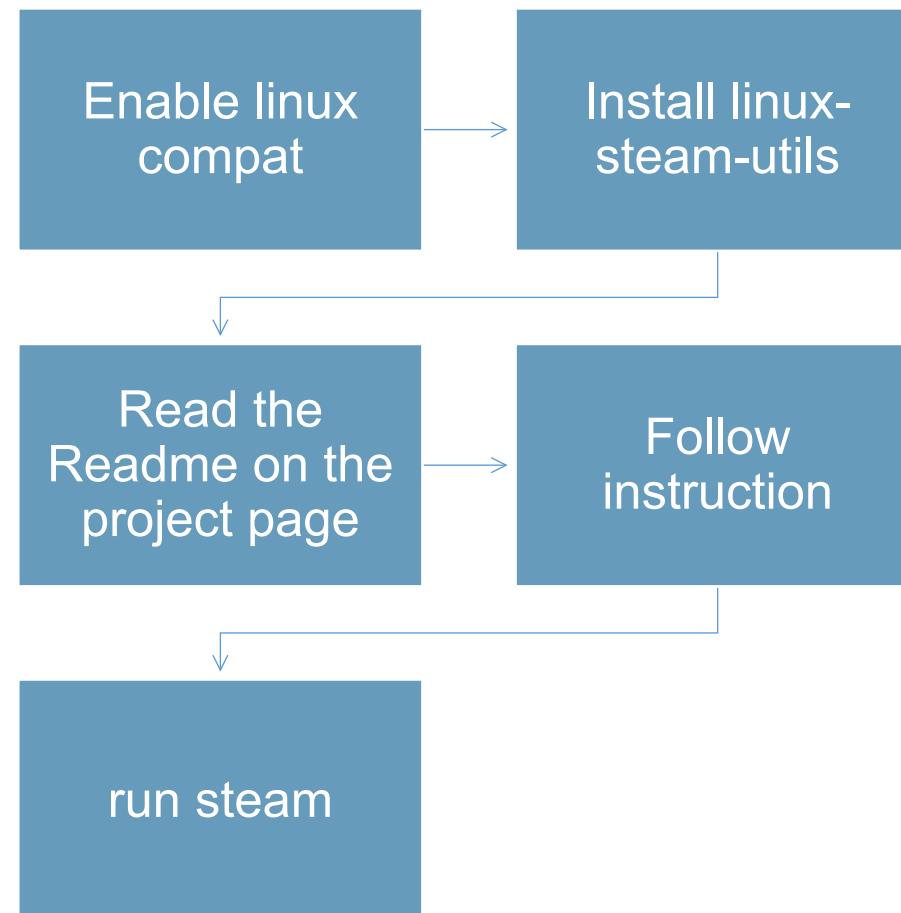
- Install linux-nvidia-libs

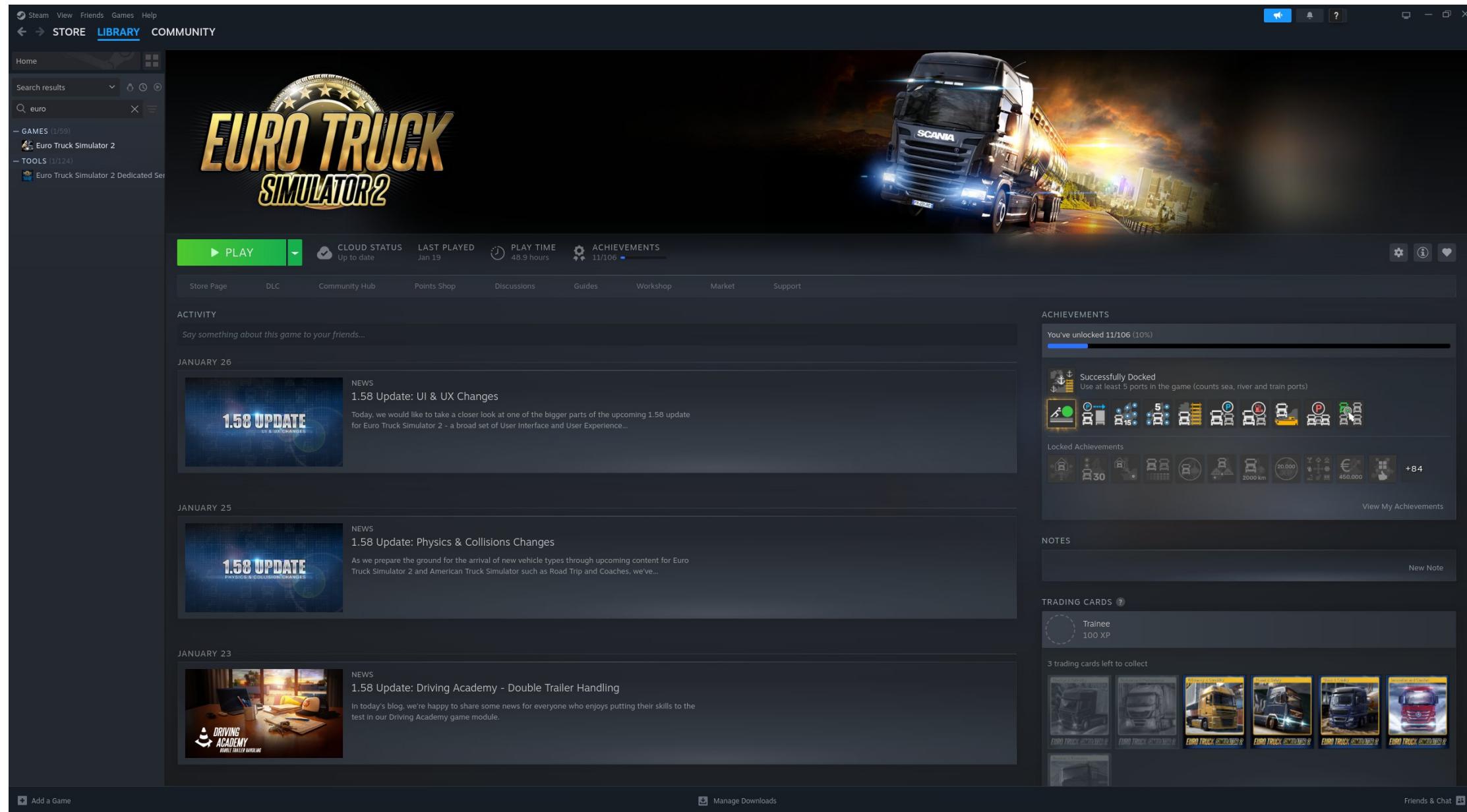
Mesa

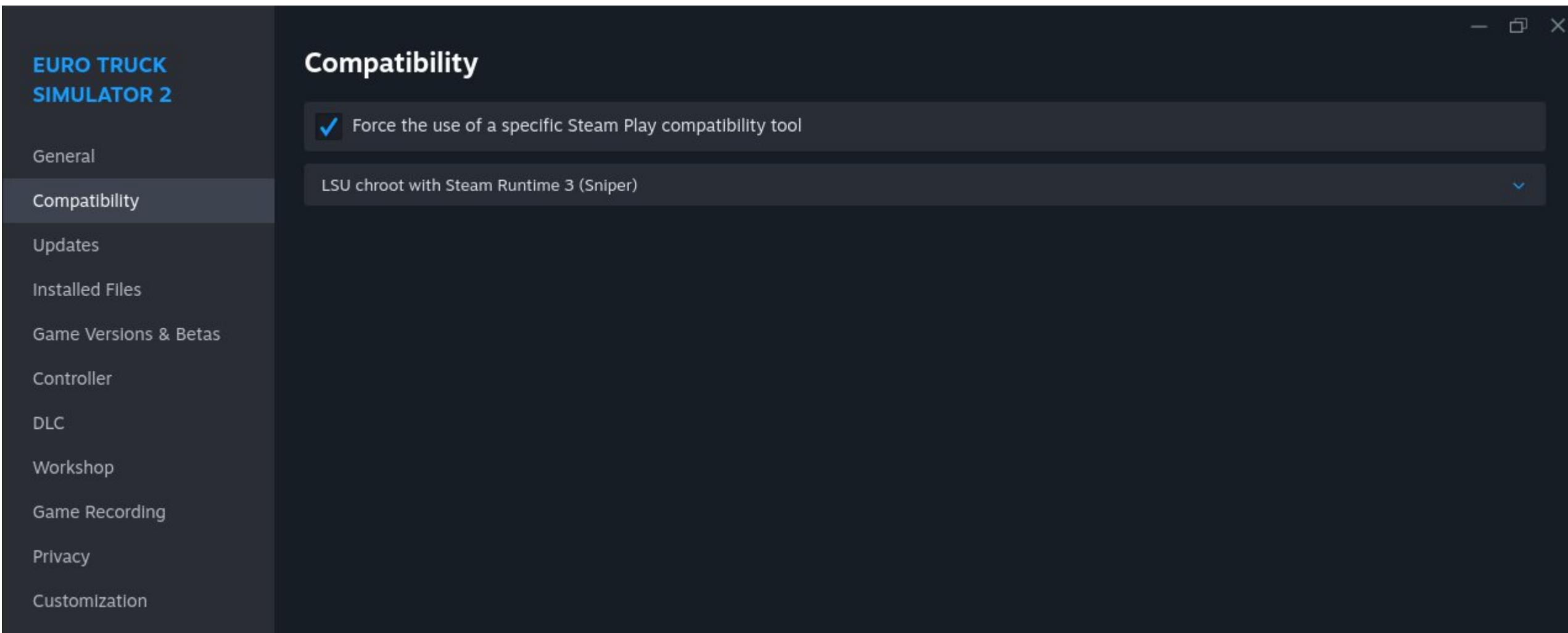
- Apply
 - <https://reviews.freebsd.org/D26836> or
 - <https://reviews.freebsd.org/D38545>
- Rebuild your linsysfs kernel module
- This patch is to allowing linsysfs to see the render device /dev/dri/renderD*

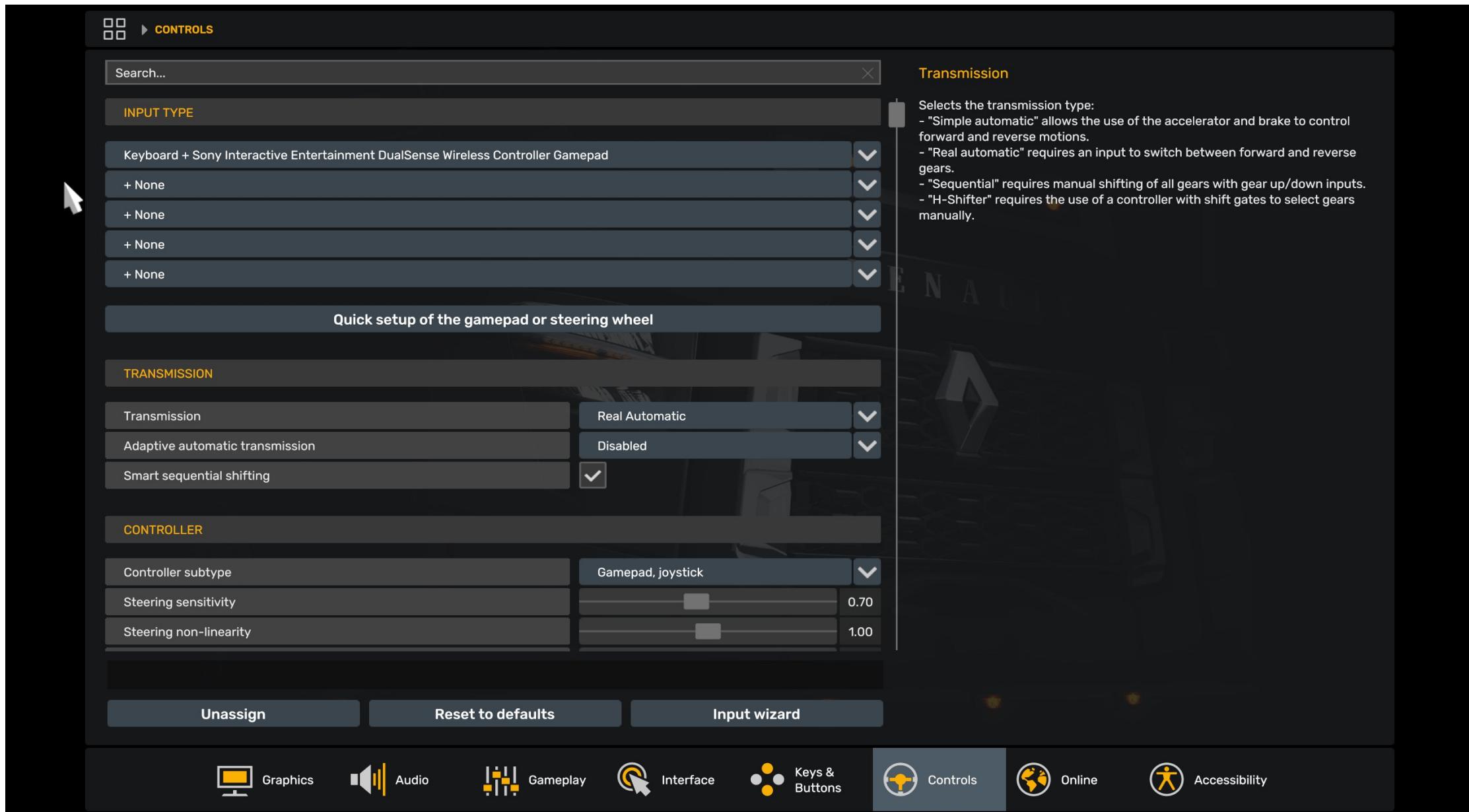
Linux Steam Utils gaming

- A set of workarounds for the Linux Steam client targeting FreeBSD 14+
- Fix the gpu acceleration issue
 - Use the information from the FreeBSD drivers with sysctl to reconstruct the character device
 - Similar to <https://reviews.freebsd.org/D26836>
- Use user chroot to use steam runtime
- Allow to play windows games with wine-proton
- Gamepad support for linux games by running a specific script:
<https://github.com/shkhln/linuxulator-steam-utils/blob/master/bin/fix-gamepad-permissions>









The screenshot shows the Steam Controller setup interface for a gamepad. The main window is titled "CONTROLS" and includes a search bar. The configuration is organized into sections: "INPUT TYPE", "TRANSMISSION", and "CONTROLLER".

INPUT TYPE

- Keyboard + Sony Interactive Entertainment DualSense Wireless Controller Gamepad
- + None
- + None
- + None
- + None

TRANSMISSION

- Transmission: Real Automatic
- Adaptive automatic transmission: Disabled
- Smart sequential shifting:

CONTROLLER

- Controller subtype: Gamepad, joystick
- Steering sensitivity: 0.70
- Steering non-linearity: 1.00

At the bottom are buttons for "Unassign", "Reset to defaults", and "Input wizard". A sidebar on the right provides a detailed description of the "Transmission" section:

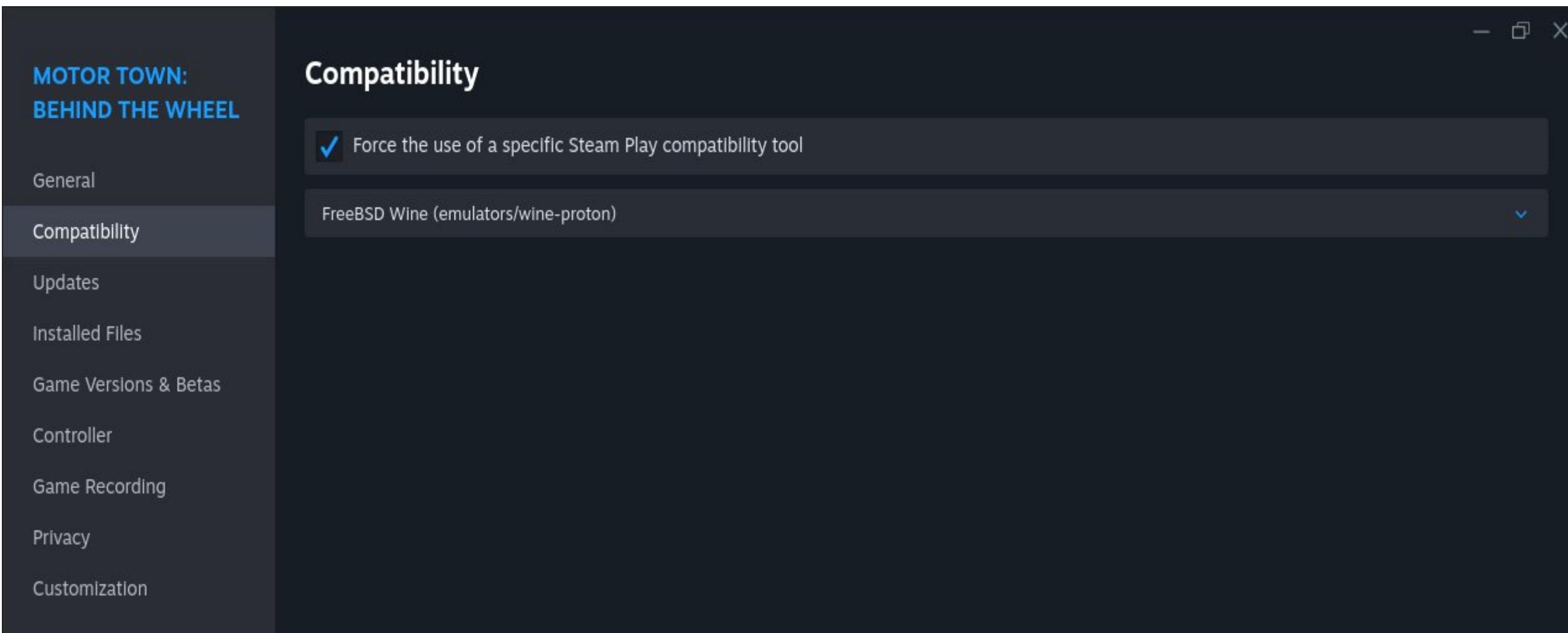
Transmission

Selects the transmission type:

- "Simple automatic" allows the use of the accelerator and brake to control forward and reverse motions.
- "Real automatic" requires an input to switch between forward and reverse gears.
- "Sequential" requires manual shifting of all gears with gear up/down inputs.
- "H-Shifter" requires the use of a controller with shift gates to select gears manually.













Gaming on bhyve

```
loader="uefi"
cpu=6
memory=12G
network0_type="virtio-net"
network0_switch="public"
disk0_name="disk0"
disk0_dev="sparse-zvol"
disk0_type="virtio-blk"
network0_mac="58:9c:fc:0d:82:f4"
uuid="0f3925b3-9252-4ca7-8861-7028415199be"

# The gpu
passthru0="3/0/0=3:0"
# The audio on the gpu
passthru1="3/0/1=3:1"
#The usb controller that have: usbc, bluetooth, other usb
passthru2="4/0/0=9:0"
```

Scripts: enable-game-vm

```
sysrc vm_list="game"  
sysrc -f /boot/loader.conf pptdevs="3/0/0 3/0/1 4/0/0"
```

rc.d service: nextboot_freebsd

```
#!/bin/sh  
# PROVIDE: nextboot_freebsd  
# REQUIRE: LOGIN  
# KEYWORD: shutdown  
  
. /etc/rc.subr  
  
name="nextboot_freebsd"  
rcvar="nextboot_freebsd_enable"  
  
: ${nextboot_freebsd_enable:=NO}  
  
command="/root/bin/disable-game-vm"  
  
load_rc_config $name  
run_rc_command "$1"
```

Scripts: disable-game-vm

```
sysrc -ci vm_list && sysrc -x vm_list || true  
sysrc -ci -f /boot/loader.conf pptdevs && sysrc -f /boot/loader.conf -x pptdevs || true
```

- Launch the script enable-game-vm as root
- Reboot the system
- Once the vm start, the monitor output will be from the vm if they are connected to the gpu that we just passthru
- If the system have multiple gpu (like an igpu for instance), it is still possible to use FreeBSD by connecting one monitor to each gpu. Thus allowing to run simultaneously two desktop: one for the Linux vm, and the other for a FreeBSD desktop.
 - For such case, having a physical kvm connected to two different usb controller will greatly help the process

The screenshot shows the FreeBSD Settings application interface. The left sidebar lists various system settings: Apps, Notifications, Search, Online Accounts, Sharing, Wellbeing, Mouse & Touchpad, Keyboard, Color Management, Printers, Accessibility, Privacy & Security, and System. The 'System' item is currently selected, highlighted with a grey background. The main content area is titled 'About' and displays 'System Details'. A modal window titled 'System Details' is open, containing two sections: 'Hardware Information' and 'Software Information'. The 'Hardware Information' section lists: Model (FreeBSD BHYVE), Memory (12.0 GiB), Processor (AMD Ryzen™ 5 4600G with Radeon™ Graphics × 6), Graphics (AMD Radeon™ RX 7800 XT), and Disk Capacity (751.6 GB). The 'Software Information' section lists: OS Name (Ubuntu 25.10), OS Type (64-bit), GNOME Version (49), Windowing System (Wayland), Virtualization (bhyve), and Kernel Version (Linux 6.17.0-12-generic). A 'Copy' button is visible in the top-left corner of the modal. The background shows a blurred desktop environment with a red square icon.

System Details

Hardware Information

- Model: FreeBSD BHYVE
- Memory: 12.0 GiB
- Processor: AMD Ryzen™ 5 4600G with Radeon™ Graphics × 6
- Graphics: AMD Radeon™ RX 7800 XT
- Disk Capacity: 751.6 GB

Software Information

- OS Name: Ubuntu 25.10
- OS Type: 64-bit
- GNOME Version: 49
- Windowing System: Wayland
- Virtualization: bhyve
- Kernel Version: Linux 6.17.0-12-generic

System Details



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Conclusion

- Gaming on FreeBSD can be achieved by multiple means:
 - Running a native open source game
 - Leveraging Wine to play Windows games
 - Leveraging Linuxulator to play Linux games directly, or through a set of workarounds added to it: `linuxulator-steam-utils`
 - Running the games through a bhyve VM with gpu passthru.

Thank you for your attention