

Supported PC Hardware

If you have to choose a new GPU, recent Nvidia GTX and AMD Radeon RX cards are supported well in the main Batocera image, and usually give very good results. A combination of an Intel i5 4xxx CPU + Nvidia GT1030 GPU will support all emulators up to the PS2 for a reasonable cost. You can check out some [Batocera benchmarks on the "Choose a PC" page](#).

Nvidia graphics cards

Current Nvidia drivers

Batocera includes most available Linux versions of the Nvidia drivers available at the time of a new release. Batocera will guess the “best” drivers to use automatically, but this decision can be overridden in case of false detection or desire to use a specific version.

To override the automatic setting, [plug your SD-card/USB drive into a computer](#). At the top level, find the `batocera-boot.conf` file and uncomment (i.e. remove the initial #) the `nvidia-driver=true` line. If the line is not present, add it anywhere. In the latest config file, it should look like this:

```
# to enable the alternative nvidia 'legacy' driver - set to nvidia-  
driver=legacy  
# see driver details & supported GPU's here -  
https://www.nvidia.com/en-us/drivers/unix/  
nvidia-driver=true  
  
# enable nvidia prime switcher, helps with modern laptops (post-2018) with  
hybrid graphics that default to using integrated graphics
```

`true` will force the latest Nvidia production drivers to be used. Use the major version from any version from Production Branch Version back to Version 390 to use that version instead. As of writing, these options are `true`, `495`, `470` `390` or `legacy` (`legacy` refers to the drivers used in the last “legacy Nvidia drivers” version available on the download page, this image is no longer updated).

Nvidia is... [pretty bad at actually supporting the cards they say they support](#). Take their officially supported hardware list with a grain of salt, and do your research. Discovering what 'architecture' (Fermi/Maxwell/Kepler etc.) your card is will take you a long way in finding out whether it's actually supported or not.

Laptop GPUs in particular are very confusing, using identical naming schemes for cards that are generations older in terms of architecture. Cards with weird extensions to their names like “700M” or “1050Q” are usually not comparable to their desktop counterparts, as a rule of thumb consider them one of two generations behind.

If you edit the file under Windows, make sure you have an editor that respects Unix line terminators.

Don't use Notepad, use a text editor like Notepad++ or Atom, that doesn't replace the Unix line terminations (LF) with DOS/Windows line terminations (CR/LF). Wordpad has also been reported to corrupt Unix text files.

You can alternatively edit this file by connecting to [Batocera through SSH](#) and remounting the /boot partition on write mode [like explained here](#), and edit /boot/batocera-boot.conf with Nano or Vim as text editors.

The official Nvidia drivers (495.46) included in Batocera **v33** support the Maxwell architecture and newer. This includes the GTX 9XX series and above (special exception, the 750Ti is also supported).

The open-source Nouveau drivers (which are ironically more compatible than the official drivers, but aren't as performant) are the “fall-back” drivers; they should serve their purpose on those weaker and older cards not capable of running more modern systems anyway. All but the bleeding edge cards are supported by the Nouveau drivers.

How can you tell if the Nvidia driver is correctly set up? Go to **SYSTEM SETTINGS → INFORMATION** and see if the OpenGL version mentions **NVIDIA** in its version. If it does, you're all set. If it mentions **MESA**, that means that the official Nvidia driver is not in use. You can also check which version Batocera had chosen automatically by running `/etc/init.d/S04populate start`.

Hybrid/Optimus Nvidia laptops

To clarify, hybrid graphics refers to the laptop's ability to automatically switch between its integrated graphics (Intel) and its discrete graphics (Nvidia), not its laptop/tablet form-factor.

For Batocera versions **v31** and newer, if you use a laptop that has both an integrated Intel and a discrete Nvidia GPU (hybrid setup or “Optimus” technology, which is very common with post-2018 laptops), you need to enable the official Nvidia drivers and then tell your laptop to actually use them with `nvidia-prime=true` as well. Your config should contain this uncommented line:

```
nvidia-prime=true
```

On Batocera versions **v30** and older, you would instead run the `batocera-hybrid-nvidia` command from SSH or terminal after activating the drivers.

Some laptops may have a setting in their BIOS which allows you to manually select the state of the hardware multiplexer, effectively making your laptop have only one graphics device. This avoids the complexities of running two graphics drivers, but offers no power savings. Changing this setting is at your own risk and support cannot be provided for it.

How can you tell if the Nvidia driver is correctly set up? Go to **SYSTEM SETTINGS → INFORMATION** and see if the OpenGL version mentions **NVIDIA** in its version. If it does, you're all set. If it mentions **MESA**, that means that the Nvidia driver is not correctly activated.

Legacy Nvidia drivers image

This image is no longer necessary as the legacy drivers are now included in the main Batocera image by default. This information is still here for archival purposes, but may be removed in the future.

Nvidia cards from the GTX 600/700 series or older may not be supported by the current official Nvidia drivers included with Batocera **v33** and below.

Legacy Nvidia drivers were initially dropped from Batocera a while ago (back in **5.26** initially!), but there is an unmaintained beta build which has the legacy drivers available at the bottom of the [downloads page](#) ([direct link](#)). This build is not maintained so it may have major bugs. Support is not available for it. If issues occur with this build, upgrade to the current build first and see if they continue to persist.

Alternatively, you could try other Batocera versions from [5.26 and down](#). Unlike other operating systems that require the latest patches to stay secure, since Batocera [isn't designed to be a secure system](#) it's perfectly fine to use an older version just for playing your retro games.

Multiple Nvidia card configuration

It is possible to select which card to use when multiple Nvidia GPUs are installed to the same machine. [Link to original post](#).

1. Create the following file in `/userdata/system/99-nvidia.conf`:

[99-nvidia.conf](#)

```
Section "Device"
Identifier "VideocardB(lowerDVI)"
Driver "nvidia"
VendorName "NVIDIA Corporation"
BoardName "GeForce GTX 1070"
BusID "PCI:2:0:0"
EndSection

Section "Screen"
Identifier "Screen0"
Device "VideocardB(lowerDVI)"
Monitor "Samsung0"
DefaultDepth 24
Option "RenderAccel" "On"
Option "HWcursor" "On"
Option "DamageEvents" "True"
SubSection "Display"
Depth 24
EndSubSection
EndSection
```

2. Replace the information as appropriate. Usually the first card detected will be PCI:1:0:0, and the BusID for the second card detected will be PCI:2:0:0. So if 1 is being selected by default then just switch it to 2.

Batocera specifically looks for the filename `99-nvidia.conf`, so to temporarily disable this just rename it to something different like `99-nvidia.conf.backup`.

It's possible to combine this with [scripting](#) in order to enable easy card switching on the fly (no reboot is required, just restart ES).

ATI/Radeon graphics cards

AMD GPUs have their drivers installed and activated automatically, no need for manual activation. However, you may have no HDMI audio output by default, read on if that applies to your machine.

Fix no audio on Radeon HDMI audio output

HDMI audio is disabled by default on Radeon graphics cards due to a black screen issue on some monitors. To enable it, edit the boot configuration file on the boot partition. In Batocera:

- **5.25** and above, `boot/syslinux/syslinux.cfg` for legacy boot and `boot/EFI/syslinux.cfg` for EFI boot.
-  **Fix Me!** **5.24** to **5.XX**, `boot/syslinux.cfg` for legacy boot
- **5.XX** and lower, `boot/grub.cfg` for legacy boot and `EFI/boot/grub.cfg` for EFI boot.

`radeon.audio=1` at the end of the relevant boot line.

For  **Fix Me!** **5.XX** and above:

```
APPEND label=BATOCERA console=tty3 quiet loglevel=0
vt.global_cursor_default=0
```

would become

```
APPEND label=BATOCERA console=tty3 quiet loglevel=0
vt.global_cursor_default=0 radeon.audio=1
```

For **5.XX** and lower:

```
menuentry "batocera.linux" {
linux /boot/linux label=BATOCERA console=tty3 quiet loglevel=0
vt.global_cursor_default=0
initrd /boot/initrd.gz
}
```

would become

```
menuentry "batocera.linux" {
```

```
linux /boot/linux label=BATOCERA console=tty3 quiet loglevel=0
vt.global_cursor_default=0 radeon.audio=1
initrd /boot/initrd.gz
}
```

Intel i965

Although most Intel integrated graphics should work out of the box, some chips such as the one in the [NUC6i5SYH](#) Intel NUC Kit require activating the latest official i965 drivers.

To activate these drivers, [plug your SD-card/USB drive into a computer](#). At the top level, find the `batocera-boot.conf` file and uncomment (i.e. remove the initial `#`) the `intel-i965-driver=true` line. If the line is not present, add it. It should look like this:

```
intel-i965-driver=true
```

Others

Other hardware issues can be diagnosed with the help of the [troubleshooting guide](#).

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