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Windows – NVIDIA

Blender uses OpenGL for the 3D Viewport and user interface. The graphics processing unit (GPU) and driver have a big impact on Blender's behavior and performance.

This section lists possible solutions for graphics glitches, problems with EEVEE and Cycles, and crashes related to your GPU.

Drivers

Upgrading to the latest graphics drivers often solves problems. Newer drivers have bug fixes that help Blender function correctly.

On Windows, drivers are provided by the graphics card manufacturer (NVIDIA). Windows Update automatically installs graphics drivers, or your computer manufacturer may provide its own version of the graphics drivers.

However, these are not always the latest version or may have been corrupted in some way. We recommend always using the official drivers.

[Download Latest NVIDIA Drivers](#)

Laptops

Laptops often have two GPUs for power saving purposes. One slower onboard GPU integrated into the main CPU (typically Intel or AMD) that uses lower power, and one faster dedicated GPU for better performance (AMD or NVIDIA) that uses more power.

For the best performance, the dedicated GPU should be used for Blender. Which GPU to use for which application can be configured in your graphics driver or operating system settings.

If there is a graphics glitch or crash specific to the onboard GPU, then using the dedicated GPU can help avoid that. Or vice versa, if the dedicated GPU causes issues, then using the onboard graphics can help.

Common Problems

Unsupported Graphics Driver Error

This means your graphics card and driver do not have the minimum required OpenGL 3.3 version needed by Blender.

Installing the latest version of the correct driver can help upgrade the OpenGL version, though some graphics cards are simply too old to run the latest Blender. In such cases, using Blender 2.79 or earlier is the only option. Starting with Blender 2.8 (which added EEVEE), there is less support for older graphics hardware.

Crash on Startup

Try running Blender from the [command line](#), to see if any helpful error messages are printed.

On Windows, graphics drivers can sometimes get corrupted or incorrectly replaced by Windows Update. In this case, it can help to uninstall all graphics drivers (there may be multiple sets installed from Intel, AMD and NVIDIA) and perform a clean installation with drivers from the manufacturer's website

Poor Performance

- Update your graphics drivers (see above).
- On laptops, make sure you are using a dedicated GPU (see above).
- Try lowering quality settings in Preferences ▸ System ▸ Memory & Limits.
- Try undoing settings in your graphics drivers, if you made any changes there.

Render Errors

See [EEVEE](#) and [Cycles](#) documentation respectively.

Wrong Selection in 3D Viewport

See [Invalid Selection, Disable Anti-Aliasing](#).

Virtual Machines

Running Blender inside a virtual machine is known to have problems when OpenGL drawing calls are forwarded to the host operating system.

To resolve this, configure the system to use PCI passthrough.

Some VM hosts may require turning on GPU paravirtualization. Some GPU vendors restrict this function to higher-priced cards or models.

Information

To find out which graphics card and driver Blender is using, use Help ► Save System Info inside Blender. The OpenGL section will have information about your graphics card, vendor and driver version.

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