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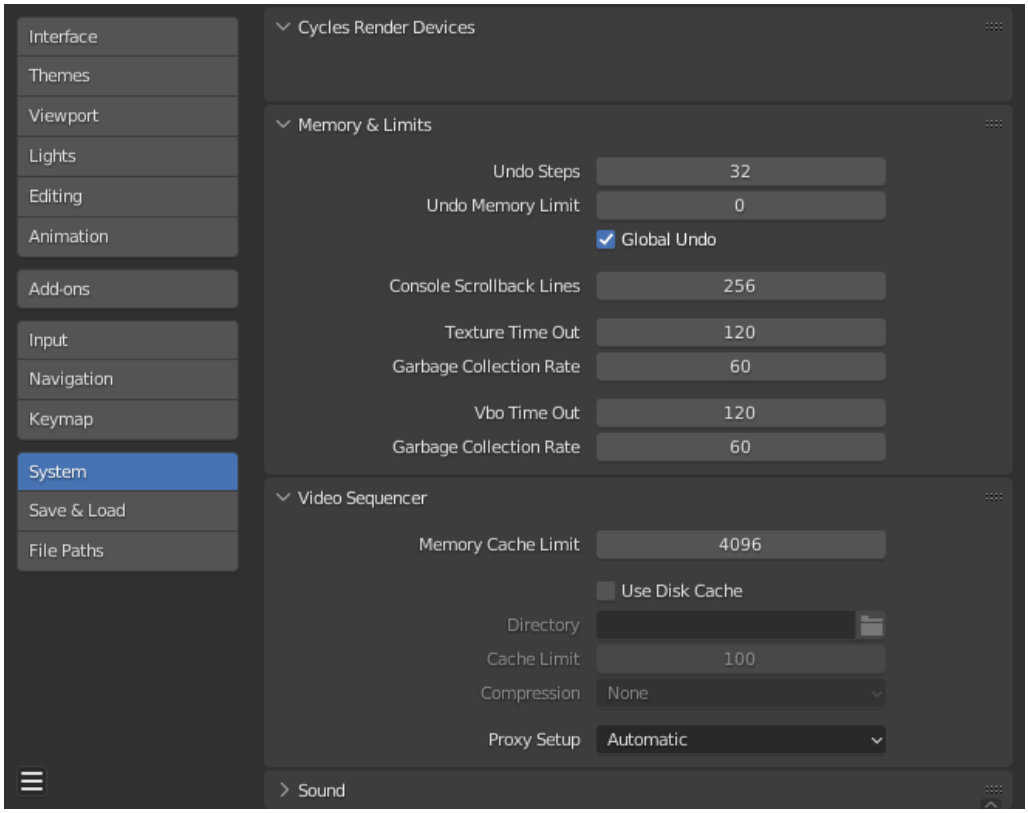
System

The *System* section allows you to set graphics card options, memory limits & sound settings.

If your hardware does not support some of the options described on this page, then they will either not be displayed or be corrected on startup.



Preferences System section.

Cycles Render Device

Changes the computing device the Cycles render engine uses to render images. Cycles can use either the CPU or certain GPUs to render images, for mc information see the GPU Rendering page.

None:
: When set to *None* or when the only option is *None*: the CPU will be used as the computing device for Cycles.

CUDA:
: If the system has a compatible NVIDIA CUDA device, it will be available as an option for rendering with Cycles.

OptiX:
: If the system has a compatible NVIDIA OptiX device, it will be available as an option for rendering with Cycles.

HIP:
: If the system has a compatible AMD HIP device, it will be available as an option for rendering with Cycles.

oneAPI:
: If the system has a compatible Intel oneAPI device, it will be available as an option for rendering with Cycles.

Metal:
: If the system has a compatible Apple Metal device, it will be available as an option for rendering with Cycles.

Distribute Memory Across Devices
: Allocates resources across multiple GPUs rather than duplicating data, effectively freeing up space for larger scenes. Note that in order for this option to be available, the GPUs must be connected together with a high bandwidth communication protocol.

  Currently only NVLink on NVIDIA GPUs is supported.

Embree on GPU
: Enables the use of hardware ray tracing on Intel GPUs, providing better overall performance.

Only supported with oneAPI rendering devices.

HIP RT

Speeds up rendering by enabling AMD hardware ray tracing on RDNA2 and above.

This feature is only available when using a *HIP* render device.

MetalRT

MetalRT for ray tracing uses less memory for scenes which use curves extensively, and can give better performance in specific cases.

Off:
Disable MetalRT (uses BVH2 layout for intersection queries).

On:
Enable MetalRT for intersection queries.

Auto:
Automatically pick the fastest intersection method.

Display Graphics

Changes how display graphics are drawn.

Backend

OpenGL:
Use OpenGL to draw display graphics.

Vulkan:
Use Vulkan to draw display graphics. Vulkan is an experimental option

Device

Select GPU device to use to draw the display graphics. The Auto option will select the best matching GPU. Device selection is only available whe the Vulkan backend is active.

Operating System Settings

Make this installation your default Blender (MS-Windows & Linux only).

On Linux, if Blender is installed from a package manager such as Snap, file association is handled by the package manager.

Register

Make the currently in use Blender installation the default for generating thumbnails and the default for opening blend-files.

Unregister

Remove file association & thumbnailer.

For All Users

Register Blender for all users, requires escalated privileges.

Linux Registration

Files are setup files under: `/usr/local` for all users, otherwise `~/.local` is used.

- A desktop file & icon is installed so the application is available in launchers.
- A file association for `*.blend` is setup.
- The thumbnailer is installed so blend-file thumbnails will be shown in file managers (**For All Users** only).

Network

Allow Online Access

Allow Blender to access the internet.

Add-ons that follow this setting will only connect to the internet if enabled. However, Blender cannot prevent third-party add-ons from violating th

rule.

Time Out
The time (in seconds) that online operations may wait before timing out.

Use the systems default when zero.

Connection Limit
The maximum number of simultaneous connections an online operation may make.

Do not limit the number of connections when zero.

Memory & Limits

Undo Steps
Number of Undo steps available.

Undo Memory Limit
Maximum memory usage in Mb (0 is unlimited).

Global Undo
This enables Blender to save actions done when you are **not** in *Edit Mode*. For example, duplicating objects, changing panel settings or switching between modes.

> Warning
>
> While disabling this option does save memory, it stops the Adjust Last Operation panel from functioning, also preventing tool options from being changed in some cases. For typical usage, its best to keep this enabled.

See also

Read more about Undo and Redo options.

Console Scroll-back Lines
The number of lines, buffered in memory of the console window. Useful for debugging purposes and command-line rendering.

Texture Time Out
Time since last access of a GL texture in seconds, after which it is freed. Set this to 0 to keep textures allocated.

Garbage Collection Rate
Number of seconds between each run of the GL texture garbage collector.

VBO Time Out
Time since last access of a GL vertex buffer object (VBO) in seconds after which it is freed (set to 0 to keep VBO allocated).

Garbage Collection Rate
Number of seconds between each run of the GL vertex buffer object garbage collector.

Max Shader Compilation Subprocesses
Max number of parallel shader compilation subprocesses used by the OpenGL backend, clamped at the max threads supported by the CPU (requires restarting Blender for changes to take effect). Setting it to 0 disables subprocess shader compilation.

Video Sequencer

Memory Cache Limit
Upper limit of the Video Sequencer and Movie Clip Editor memory cache (in megabytes). For an optimal Clip editor and Sequencer performance high values are recommended.

Disk Cache
Writes cached strips to disk which can store a lot more than RAM. To use the Disk Cache, this option must be enabled, the *Disk Cache Directo* and *Disk Cache Limit* set, then save or reopen the existing blend file.

and *Disk Cache Limit* set, then save or reopen the existing blend-file.

Directory
The location on disk to store the cache.

Cache Limit
Upper limit of the Video Sequencer's disk cache (in gigabytes), setting to zero disables disk cache.

Compression
The level of compression to compress image in the disk cache. This has a trade off between saving disk space and requiring more processing. The more compression used requires faster disk write/read speeds and more CPU usage.

Proxy Setup
When and how Proxies are created.

Automatic:
Build proxies for added movie and image strips in each preview size.
Manual:
Set up proxies manually.

See also

Sequencer Cache Properties

Sound

This panel contains the sound settings for live playback within Blender and are only available with a device other than *None*. To control these settings for exporting sound see the Encoding Panel and Audio Panel.

Audio Device
Sets the audio engine to use to process and output audio.

None:
No audio playback support (audio strips can still be loaded and rendered normally).
CoreAudio:
On macOS, CoreAudio is the native audio API. This is the default setting for macOS users and should be preferred.
PulseAudio:
PulseAudio is the most commonly used sound server on modern Linux distributions. If PulseAudio is available, this should be the preferred setting on Linux.
WASAPI:
On Windows, WASAPI is the native audio API introduced with Windows Vista. This is the default setting for Windows users and should b preferred.
Jack:
High quality professional audio engine that needs a properly configured server running on your system. Supports accurate synchronization with other professional audio applications using Jack.
OpenAL:
Available on all platforms in case the native engines do not work. The played back 3D audio might sound different than when rendered.
SDL:
Uses Simple Direct Media Layer API from libsdl.org which supports all platforms. Might be of lower quality and thus should only be used a backup.

Channels
The number of audio source "locations" to output.

Mono:
Output a single audio channel.
Stereo:
Output two audio channels; typically a left and right channel.
4 Channels:
Output a four audio channels

Output a four audio channels.

5.1 Surround:

Output a five audio channels with one LFE channel.

7.1 Surround:

Output a seven audio channels with one LFE channel.

Mixing Buffer

Sets the number of samples used by the audio mixing buffer. Higher buffer sizes can cause latency issues, but if you hear clicks or other problems, try to increase the size.

Sample Rate

Sets the audio sampling rate.

Sample Format

Sets the audio sample format.

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