



PugetBench for DaVinci Resolve

User Guide

(Version 0.92 BETA)

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About PugetBench

DaVinci Resolve is not only an industry-standard coloring tool, but also includes features for video editing, VFX, and more. While we also have benchmarks for Premiere Pro, After Effects,

and other creative applications, every application will utilize the hardware in a computer in very different and unique ways which can make it extremely difficult to determine exactly what hardware will give the end user the best possible performance.

Due to a lack of repeatable and consistent benchmarks for DaVinci Resolve and similar applications, we decided to develop our own set of benchmarks. Our suite of benchmarks are designed to thoroughly test many of the most popular software packages currently available using real world projects and workflows and are used in many of our [hardware analysis articles](#).

We have free versions of our benchmarks available that allow individuals to evaluate the performance of their own system, but also have a licensed version that include features that are often desired by those performing testing for commercial applications (system reviewers, hardware/software developers, workstation manufacturers, etc.).

This paid version includes permission for commercial use, CLI automation, .csv result logging, and email support. More information - including licensing options - is available at <https://www.pugetsystems.com/go/DRBenchmark>

If you wish to compare your results to other systems, you can browse all the uploaded results are <https://www.pugetsystems.com/benchmarks/index.php>

We also have several benchmarks available for other applications outside of DaVinci Resolve. You can view the full list at [https://www.pugetsystems.com/all_articles.php?filter\[\]=Benchmark](https://www.pugetsystems.com/all_articles.php?filter[]=Benchmark)

Download Links

The latest links for the benchmarks and related files are available on the main benchmark page: <https://www.pugetsystems.com/go/DRBenchmark>

A Note on DaVinci Resolve Free vs Studio

Blackmagic has two versions available for DaVinci Resolve - a Free version and a paid "Studio" version. In the context of benchmarking, the primary differences between these two versions is the following:

	Free	Studio
Maximum GPUs	1	8
H.264/5 GPU Decoding	No	Yes
H.264/5 GPU Encoding	No	Yes
Max Timeline Resolution	4K	8K+
OpenFX	Watermarked	Full
Noise Reduction	Watermarked	Full

While the “Standard” and “R3D Mode” presets can be run on either version, the lack of GPU decoding/encoding means that you will always see lower performance with the Free version of DaVinci Resolve. In addition, if you want to test multiple GPUs or run the Extended preset, you will need the Studio version.

Install & Run Instructions

PugetBench for DaVinci Resolve comes in a zip file that can be unzipped to any location on your system that has at least 50GB free. The benchmark requires DaVinci Resolve (free or Studio) to be installed on the system. We highly recommend launching Resolve at least once before running the benchmark in order to

To run the benchmark, launch the “Run PugetBench for DaVinci Resolve” program. Within the benchmark utility, there are options to run either the “Standard” or “Extended” benchmark preset. Full information on these tests is available at <https://www.pugetsystems.com/go/DRBenchmark> . Note that the “Extended” preset requires DaVinci Resolve Studio and a GPU with at least 8GB of VRAM.

If you wish to use the CLI (requires a license key), there is also a sample .bat file to get you started. Full command line options are listed later in this guide.

Recommended Application Preferences

Since our benchmark tests Resolve in the most real-world way possible, there are very few settings that are automatically set when running the benchmark. Settings such as which GPUs

are being used, GPU mode (OpenCL, CUDA, etc.), cache locations, etc. are NOT set by the benchmark and must be manually configured.

We highly recommend checking to make sure important settings like GPU acceleration are properly configured before running the benchmark.

The main settings we recommend checking before first running the benchmark or anytime you change the GPU are the following:

DaVinci Resolve -> Preferences... -> Memory and GPU

- **GPU processing mode** - Leave on Auto or set to CUDA for NVIDIA GPUs and OpenCL for AMD GPUs.
- **GPU selection mode** (only available if GPU processing mode is *not* Auto) - Leave on Auto or set to Manual if you have multiple GPUs and want to be able to select which GPUs to use.
- **Use display GPU for compute** (only available on Studio version if GPU selection mode is Auto) - If using multiple GPUs in Auto mode, you want this to be checked so Resolve will use all available GPUs.

DaVinci Resolve -> Preferences... -> Decode Options

- **Use GPU for Blackmagic RAW Decode** - Leave this option checked.
- **Decode H.264/H.265 using hardware acceleration** - Has options for NVIDIA, AMD, and Intel Quicksync depending on what is available in the system. In almost all cases, you want everything checked that is available.
- **Use GPU for R3D** - We recommend using “Debayer” mode, although “Decompression and Debayer” mode can be faster in some situations. Which is faster depends on your CPU and GPU combination, but in general the more powerful your CPU, the more likely “Debayer” mode will be better overall. If in doubt, the benchmark has a special “Determine Best R3D GPU Mode” preset that will compare these two settings and tell you which is faster.

DaVinci Resolve -> Preferences... -> General

- **Automatically check for updates** - Not required for the benchmark, but we recommend unchecking this option to prevent the “New version found” screen from halting the benchmark process.

Automation Settings (Requires License)

When using a licensed version of PugetBench, several settings are unlocked to assist in running the benchmark for commercial purposes. These settings are all also configurable or auto-set via the [Command Line Utility](#).

- **Do NOT upload results** - Checked by default when a license is first entered, this will prevent the benchmark from uploading the results to the [PugetBench online database](#). This option is automatically selected if you are using the CLI utility unless you use the “\upload_results” argument.
- **Automatically run on startup** - The benchmark will auto-start with the last saved settings the next time the plugin is loaded. This option is automatically selected if you are using the CLI utility.
- **Write CSV/JSON log file** - Writes the benchmark results to a CSV and JSON log file to a “Documents\PugetBench\DaVinci Resolve*TIMESTAMP*” folder. Note that if you are using the CLI utility, this is automatically selected, but you can also use the “\copy_log” argument to copy the CSV log file to a custom location.
- **Suppress dialog boxes** - Hides any dialog boxes such as the startup and benchmark complete dialogs, but does not hide any warning/error boxes. This option is automatically selected if you are using the CLI utility.
- **Exit app on completion** - When the benchmark is done running, it will automatically exit the benchmarked application. This option is automatically selected if you are using the CLI utility.

Command Line Utility (Requires License)

To use the CLI arguments, you must run the benchmark .exe directly. It is found in “/pugetbench-resolve-win32-x64/pugetbench-resolve.exe”

This utility requires a number of switches in order to function properly. Provided in the benchmark folder is an example “CLI Sample” .bat file that has the most common options set. You can use this as a starting point, then customize or further refine the benchmark run with the below switches.

CLI Switches

/license _____

REQUIRED License key for this benchmark.

Example: */license* XXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXXXXXX

/copy_log _____

Copy the benchmark log file to another location. If a file already exists, it appends to the end. If this is not set, a .csv log file is still generated in your Documents\PugetBench\DaVinci Resolve*TIMESTAMP* folder, but just not copied to a custom location.

Default: [blank]

Example: `/copy_log "Q:\Results\Benchmark.csv"`

/upload_results

Uploads the results to our public benchmark database. This is enabled by default on the free version of the benchmark, but opt-in for the commercial licensed version when using the CLI utility.

Default: [disabled]

/preset _____

Which benchmark preset to use. Options are "standard", "extended", and "r3dmode"

Default: standard

Example: `/preset "extended"`

Troubleshooting & Support

If you have any issues with the benchmark not properly running, there are a number of things you can try:

1. Check the benchmark page to ensure that your system and software meets the benchmark's requirements.
2. Check the [Recommended Application Preferences](#) section
3. Do not attempt to use the system while the benchmark is running.
4. Uninstall and reinstall DaVinci Resolve
5. Clear the application preferences by deleting the "DaVinci Resolve" folder in "%appdata%\Blackmagic Design"

6. Ensure the OS and DaVinci Resolve are set to English.
7. Make sure the path to the benchmark files does not have any special or non-English characters.
8. The benchmark does not work over an unmapped network drive (I.E. //192.168.1.2/Benchmark/). Mapped drives *should* work, but we highly recommend having the benchmark on a local drive as network drives can lower performance.

Lower than expected performance can be caused by a number of factors, but the most common are:

1. Outdated BIOS/drivers/software
2. Windows power profile (High Performance is recommended for the best results)
3. Resolve application settings not correct (GPU acceleration not enabled, etc.)
4. Background tasks (antivirus, Windows Update, etc.)

If you still have issues, we recommend posting in the comments section of the appropriate benchmark page. If you have a commercial license, you can also contact us for support at: benchmark-support@pugetsystems.com

Tips

For the most reliable benchmarking process, we recommend the following tips:

- Clear the application preferences by deleting the “DaVinci Resolve” folder in “%appdata%\Blackmagic Design”. Launch Resolve manually after clearing the preferences and check that important settings like GPU acceleration is enabled.
- Use the “Determine Best R3D GPU Mode” preset to determine which R3D GPU mode is best for your hardware configuration. Note that which mode is best will change depending on your CPU and GPU combination.
- Do not attempt to use the system while the benchmarks are running. This can cause the benchmark to break, and even if it does not can result in lower benchmark results.
- Make sure the system is not set to go to sleep or hibernate.
- Make sure you are using the latest Windows version, drivers, and BIOS.
- As these are real-world tests, the results will not be exactly the same between runs and can vary by as much as 5%. If you need highly accurate results, we recommend running the benchmark multiple times and using either the average or fastest overall result.