



## UNIGINE HEAVEN BENCHMARK 4.0 (Basic Edition)

### OVERVIEW

[Heaven Benchmark](#) is a beautiful GPU benchmark powered by the cutting-edge [UNIGINE Engine™](#). It is a reliable tool that produces unbiased workload to determine the stability of a GPU under extremely stressful conditions, as well as check the cooling system's potential under maximum heat output.

Heaven Benchmark immerses a user into a magical steampunk world of shiny brass, wood and gears. Nested on flying islands, a tiny village with its cozy, sun-heated cobblestone streets, an elaborately crafted dirigible above the expanse of fluffy clouds, and a majestic dragon on the central square gives a true sense of adventure. An interactive experience with fly-by and walk-through modes allows for exploring all corners of this world.

### FEATURES

- Extreme hardware stability testing
- Accurate results due to 100% GPU-bound benchmarking
- Benchmarking presets for convenient comparison of results
- Stress testing mode (benchmark looping) **[only for Advanced and Pro versions]**
- Support for DirectX 9, DirectX 11 and OpenGL 4.0
- Multi-Platform support for Windows, Linux and Mac OS X
- Comprehensive use of hardware tessellation, with adjustable settings
- Dynamic sky with volumetric clouds and tweakable day-night cycle
- Real-time global illumination and screen-space ambient occlusion
- Cinematic and interactive fly/walk-through camera modes
- Support for multi-monitor configurations
- Various stereo 3D modes
- GPU temperature and clock monitoring

- Command line automation support [only for Advanced and Pro versions]
- Reports in CSV format [only for Advanced and Pro versions]
- Support for software rendering mode in DirectX 11 for reference purposes [only for Pro version]
- Support for English, Russian and Chinese languages

## SYSTEM REQUIREMENTS

- Hardware:
  - GPU:
    - ATI Radeon HD 4xxx and higher
    - NVIDIA GeForce 8xxx and higher
    - Intel HD 3000 and higher
  - Video memory: 512 Mb
  - Disk space: 1 Gb
- Operating system:
  - MS Windows XP / Vista / 7 / 8
  - Linux (proprietary video drivers required)
  - Mac OS X 10.8+ (Mountain Lion)

For hardware tessellation, both a video card with DirectX 11 / OpenGL 4.0 support and MS Windows Vista / 7 / 8 or Linux are required.

## LAUNCH OPTIONS

In the launcher, it is possible to choose one of the benchmarking presets or specify settings to run Heaven.

- **Language** - use English, Russian or Chinese language for the interface
- **Preset** - benchmarking preset
  - **Custom** - allows for changing launch options
  - **Basic** - provides standard GPU load
  - **Extreme** - provides extremely heavy load for system testing
- **API** - graphics API to be used:
  - DirectX 11
  - DirectX 9 (no tessellation)
  - OpenGL
- **Quality** - quality preset, from Low to Ultra high.
- **Tessellation** - tessellation preset:
  - **Disabled** - disable the tessellation
  - **Moderate** - this mode is targeted to provide reasonable performance on a

wide range of DX11 hardware.

- **Normal** - default mode available in the benchmark shows optimal quality-to-performance ratio. That's the way to achieve prominent visual difference with hardware tessellation technology.
- **Extreme** - pushes up the tessellation level to the extreme to showcase the capabilities of the top-shelf hardware
- **Stereo 3D** - enables stereo rendering:
  - **Disabled** - no stereo 3D rendering.
  - **3D Vision** - NVIDIA 3D Vision stereo. This mode requires 3D Vision-compatible graphics card and monitor, as well as active shutter glasses (or anaglyph ones, depending on the 3D Vision driver settings).
  - **3D Surround** - NVIDIA 3D Surround stereo across three monitors (the same requirements as for NVIDIA 3D Vision apply).
  - **Dual Output** - stereo mode for custom VR/AR output devices that support separate images input, such as 3D video glasses or helmets.
  - **Side-by-side** - screen is halved horizontally to render left- and right-eye images
  - **Top-and-bottom** - screen is halved vertically to render left- and right-eye images
  - **Interlaced** - interlaced stereo
  - **Anaglyph** anaglyph stereo (red-cyan glasses are required).
- **Multi-monitor** - render Heaven across multiple monitors
  - **Disable** - render on one monitor
  - **Surround 3x1** - span Heaven across three monitors using one window only
  - **Wall Auto** - detect the number of available monitors (works only for identical monitors, with identical resolution)
  - **Wall 2x1** - 2 monitors in a row
  - **Wall 1x2** - 2 monitors in a column
  - etc.
- **Anti-aliasing** - set the level of hardware anti-aliasing or disable it
- **Full Screen** - full screen mode
- **Resolution** - choose screen resolution or window size from the list
  - **System** - auto-detection of used resolutions
  - **Custom** - set custom width and height to be used

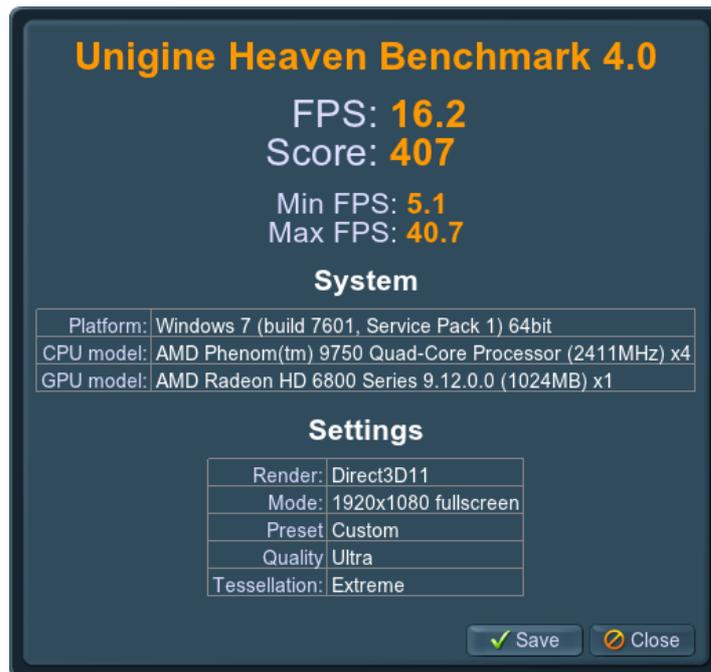
**Run** button runs Heaven Benchmark application.

## BENCHMARK

This option starts benchmarking of the system. During this run, the GPU is stressed to 100% in order to test if it runs reliably under an extremely heavy load.

The following parameters are displayed during benchmarking (you can press Esc to cancel a test run):

- **FPS** - the current, per-frame FPS
- **Time** - duration of benchmarking
- **Frames** count
- **Min FPS** - the minimum FPS since the beginning of benchmarking
- **Max FPS** - the maximum FPS since the beginning of benchmarking
- **Scene** - the number of cinematic scenes shown/left



The results of benchmarking are output onto the screen and can be saved into HTML file. In addition to the above mentioned parameters, they include:

- **FPS** – average FPS during benchmarking
- **Score** – your system score
- **Platform** – system data and version of the UNIGINE Engine powering the benchmark
- **GPU** and **CPU** model data
- **Settings** - graphics settings used to run the benchmark

## CAMERA

The Camera mode option allows to view the cinematic scenes or switch to an interactive mode:

- **Cinematic** - cinematic scenes

- **Free** - fly-by mode
- **Walk** - walk-through mode

In the **Cinematic** camera mode, the following hot keys are available:

- Space bar — stop/resume scene playback
- Enter — skip the scene
- Backspace — replay the scene from the start

In interactive camera modes the depth of field effect can be additionally tweaked:

- **Focus** - change the focus point from close-by objects to distant ones
- **Aperture** - change the width of the area in focus

## ENVIRONMENT

The Environment option allows for setting any time from the full day-night cycle. From early dawn to the deep of the starry night, true-to-life atmospheric conditions are simulated.

## TESSELLATION

The Tessellation options allow for changing the hardware-accelerated tessellation on the fly, to see drastically more detailed the scene becomes. Tessellation can be toggled via **Enable** option or **F3** hotkey.

- **Scale** controls the scale of displacement. The higher the Scale, the more raised the details are. Low values result in level surfaces.
- **Factor** controls how finely to tessellate. The higher the Factor, the higher the number of polygons into which objects are subdivided in real-time.
- **Distance** controls if further objects are less tessellated to save performance. Low values means that only close-by objects are tessellated.

To see how polygons are divided in real-time, the wireframe of objects can be toggled via **F2**.

## QUALITY

The Quality option allows for choosing between 4 quality presets when rendering Heaven, from Low to Ultra one. This option effectively scales the rendering performance load.

## SOUND

The Sound option toggles the background sound.

## LEGAL NOTICES

This software is powered by UNIGINE Engine (c) UNIGINE Corp. 2005-2013.

3<sup>rd</sup>-Party Libraries:

- libpng library is copyright (c) 2004, 2006-2013, Glenn Randers-Pehrson.
- Portions of this software are copyright (c) 2013, The FreeType Project ([www.freetype.org](http://www.freetype.org)). All rights reserved.
- Regular expressions library is copyright (c) 1991, Tatu Ylonen.
- OggVorbis software codec is copyright (c) 1994-2011, Xiph.org Foundation.
- This software is based in part on the work of the Independent JPEG Group.
- MiniZip library is copyright (c) 1998-2010, Gilles Vollant.
- zlib library Copyright (C) 1995-2010, Jean-loup Gailly and Mark Adler.

Heaven Benchmark (c) UNIGINE Corp. 2005-2013.