OVERVIEW

Valley Benchmark is a new GPU stress-testing tool from the developers of the very popular and highly acclaimed Heaven Benchmark. The forest-covered valley surrounded by vast mountains amazes with its scale from a bird's-eye view and is extremely detailed down to every leaf and flower petal. This non-synthetic benchmark powered by the state-of-the art UNIGINE Engine™ showcases a comprehensive set of cutting-edge graphics technologies with a dynamic environment and fully interactive modes available to the end user.

Offering a rare chance to experience a breath of untapped, crystal clear air, Valley Benchmark allows you to encounter a morning high up in the mountains when the snow-capped peaks are just barely glittering in the rising sun. Be it flying over the vast green expanses or hiking along rocky slopes, this journey continues as long you wish. Unique in every corner, this open-space world provides a wonderfully relaxing experience under the tranquil music and sounds of nature.

FEATURES

- Extreme hardware stability testing
- Per-frame GPU temperature and clock monitoring
- Support for Windows, Linux, Mac OS X
- Advanced visual technologies: dynamic sky, volumetric clouds, sun shafts, DOF, ambient occlusion
- 64000000 square meters of extremely detailed, seamless terrain
- Procedural object placement of vegetation and rocks
- The entire valley is free to be explored in interactive fly-by or hike-through modes
- User-controlled dynamic weather
- Support for stereo 3D and multi-monitor configurations
- Benchmarking presets
- Stress testing mode (benchmark looping) [only for Advanced and Pro versions]
- Command line automation support [only for Advanced and Pro versions]
- Highly customizable reports in CSV format [only for Advanced and Pro versions]
- Support for software rendering mode in DirectX 11 [only for Pro version]

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: 1.5 Gb

- Operating system:
  - MS Windows XP / Vista / 7 / 8
  - Linux (proprietary video drivers required)
  - Mac OS X 10.8+ (Mountain Lion)

LAUNCH OPTIONS

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

- **Language** - use English, Russian or Chinese language for the interface
- **Preset** - benchmarking preset, see the details below.
- **API** - graphics API to be used:
  - DirectX 11
  - DirectX 9
  - OpenGL
- **Quality** - quality preset, from Low to Ultra high.
- **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).
- **Monitors** - render Valley across multiple monitors
  - **Single** - render on one monitor
  - **Surround 3x1** - span Valley 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 the Valley Benchmark application.

Presets

Each preset allows for comparable results across hardware configurations and has its own settings.

- **Custom** - allows for changing launch options
- **Basic** - provides standard GPU load
  - API: DirectX 9 on Windows and OpenGL on Linux and Mac
  - Quality: medium
  - Resolution: 1280x720, windowed mode
  - Anti-aliasing: x2
  - VSync: disabled
  - Stereo: disabled
  - Ambient Occlusion: enabled
  - Volumetric Shadows: enabled
  - Motion Blur: disabled
- **Extreme** - provides heavy load for system testing
  - API: DirectX 11 on Windows and OpenGL on Linux and Mac
  - Quality: ultra
  - Resolution: 1600x900, windowed mode
  - Anti-aliasing: x8

- VSync: disabled
- Stereo: disabled
- Ambient Occlusion: enabled
- Volumetric Shadows: enabled
- Motion Blur: enabled
- **Extreme HD** - provides extremely heavy load in the fullscreen mode
  - API: DirectX 11 on Windows and OpenGL on Linux and Mac
  - Quality: ultra
  - Resolution: 1920x1080, fullscreen mode
  - Anti-aliasing: x8
  - VSync: disabled
  - Stereo: disabled
  - Ambient Occlusion: enabled
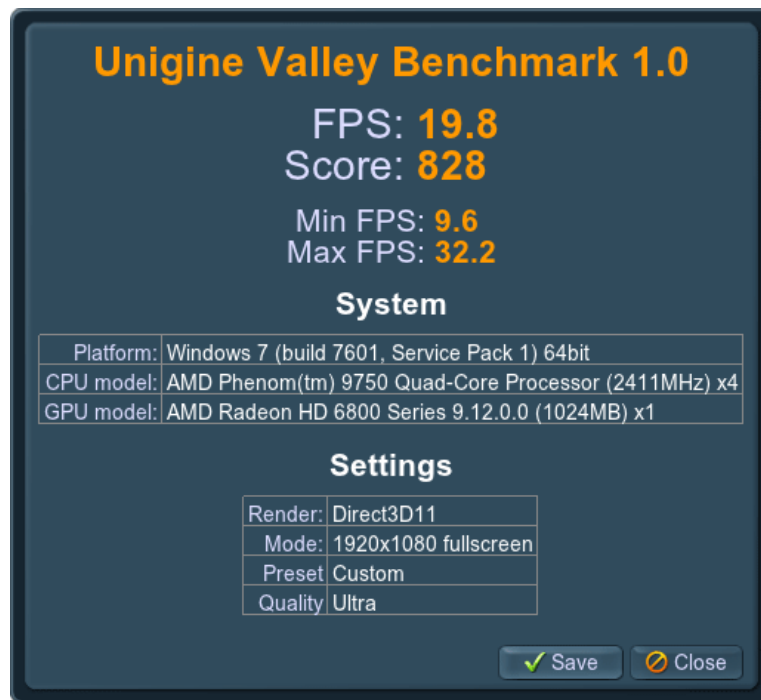 - Volumetric Shadows: enabled
  - Motion Blur: enabled

BENCHMARK

This option starts benchmarking of the system. During this run, the GPU is stressed to determine the system's reliably under graphics-intensive load.

The benchmarking is always done according to the parameters set in the launcher. If the **VSync** option is enabled in benchmark's Settings, the preset is reset to a **Custom** one.

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

Unigine Valley Benchmark 1.0

FPS: **19.8**
Score: **828**

Min FPS: **9.6**
Max FPS: **32.2**

System

Platform:	Windows 7 (build 7601, Service Pack 1) 64bit
CPU model:	AMD Phenom(tm) 9750 Quad-Core Processor (2411MHz) x4
GPU model:	AMD Radeon HD 6800 Series 9.12.0.0 (1024MB) x1

Settings

Render:	Direct3D11
Mode:	1920x1080 fullscreen
Preset	Custom
Quality	Ultra

✓ Save   ⊘ Close

The results of benchmarking are output onto the screen and can be saved into a 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 sit back and watch the cinematic scenes or switch to an interactive mode to explore the green Valley expanses detailed to every leaf:

- **Cinematic -** cinematic scenes
- **Free** - fly-by mode for exploring the valley from the bird's-eye view
- **Walk** - walk-through mode for hiking along the rocky slopes

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 makes the ever-dynamic weather and a full day-night cycle available for change. In the blink of an eye the sunny day-time reverie can turn into a whole new, gloomy scenery, when the skies are heavy with stormy clouds and erupt with slashing rain.

Time

This option allows you to set any time from the full day-night cycle. From early dawn to the deepest of night, true-to-life atmospheric conditions are simulated.

- The sun and the full moon rising and setting over the horizon
- Real geographic location-based stars
- Immersive ambient sounds accounting for a time change

Clouds

As you change weather conditions, the bright blue sunny sky will become densely overcast with heavy rain clouds generated by a physically accurate algorithm. At daytime hours, shadows are softened as they are cast onto the gloomy ground.

Rain

Using this option, you can enable the rain and see it drizzle calmly or pour down in a shower. It comes together with the following effects:

- Trickles down wet stone surfaces
- Volumetric fog lying low at the valley bottom
- Raindrops on the camera lens

Wind

This option allows you to enable the wind and change its strength from a light breeze to a blustery storm. Trees and grass sway under gusts of wind, and the air is filled with dust particles and leaf shreds.

QUALITY

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

SOUND

The Sound option toggles the meditative background music and the sounds of nature.

- A set of sounds changes with the time of day, from birds singing during the daytime to crickets chirp deep in the night.
- Accounting for a weather change, a sound of pouring rain and rushing wind are added to the ambient environment.

AUTOMATION

A number of automation Python scripts (*.py files) for different scenarios are available out of the box (Python 3.x is required). These scripts are located in the *automation* directory.

Report Files

Report files are generated in CSV format and are compatible with any spreadsheet applications, such as Microsoft Excel or OpenOffice Calc. They are written into the specified file with *.csv* extension.

Reports are saved into the following directory by default:

- For Windows XP, it is `C:\Documents and Settings\<YourProfile>\Valley\reports`
- For Windows Vista / 7 / 8, it is `C:\Users\<YourProfile>\Valley\reports`
- For Linux, it is `~/Valley/reports`

Available Scripts

all_apis.py

Runs the benchmark in different graphics APIs: OpenGL, DirectX 9, DirectX 11.

all_resolutions.py

Runs the benchmark with different screen resolutions. See *resolutions* array in the script for the details.

loop_100x.py

Performs a stress-test by running the benchmark in a loop mode. Edit iterations_number parameter to control the number of loops.

single_run.py

Runs the benchmark a single time.

Customization

To customize any of these scripts, modify ***valley_automation.run()*** options inside of them.

- **api**: *DX9* (by default)*, DX11, GL*
- **fullscreen**: *0, 1* (by default)
- **aa**: *0* (by default)*, 2, 4, 8*
- **width**: an integer value (in pixels, *1280* by default)
- **height**: an integer value (in pixels, *720* by default)
- **quality**: *LOW, MEDIUM, HIGH, ULTRA* (by default)
- **log**: report file name (can contain subfolders), set to '' to omit
- **log_caption**: comma-separated report file captions
- **log_format**: Report format (by default, it is *$F,$A,$v,$m,$quality,$g,$c*).
  Available placeholders are:
    - **$F** – average frames per second value
    - **$z** – minimal frames per second value
    - **$x** – maximal frames per second value
    - **$v** – screen resolution
    - **$m** – anti-aliasing mode

- **$g** – video card info
- **$c** – CPU info
- **$A** – graphics API
- **$S** – score
- **$quality** – quality preset