OCAT Documentation

AMD

Dec 21, 2021

Contents

Overview

1.1 System Requirements

- Windows 7 64bit, Windows 10 64bit

1.2 Usage

To run the program start **OCAT**.

1.2.1 Overlay

- *Start overlay* enables capturing of all applications. The button turns green if the option is active. That means OCAT will try to inject its overlay into any application that is started afterwards. Notice: For UWP applications, there will be no overlay.

- *Overlay position* Determines the position of the overlay. Choose between top left, top right, bottom left and bottom right. **VR:** The overlay is positioned at the center of the viewspace or the worldspace, depending on the compositor. However, the overlay position still determines the arrangement of the overlay sub-components such as displaying the capture information above or below the FPS/ms data.

- *Enable overlay when OCAT starts* Activate this option if OCAT should immediately start its global overlay injection on start up.

- *Require ALT with hotkeys* Option to require ALT in combination with the hotkey in order to trigger the hotkey functionality.

- *Overlay visibility hotkey* Hotkey to show and hide the in game overlay globally. Press this button to assign a different hotkey. This setting only works after successful injection. The toggle won't work if no overlay is injected. The default hotkey is F9.

- *Frame graph visibility hotkey* Hotkey to show and hide the in game overlay rolling plot of frame times. The default hotkey is F7.

- *Disable overlay while recording* Option to disable the overlay while capturing to reduce the overhead.

1.2.2 Capture

- *Capture hotkey* Hotkey used for starting and stopping a capture. To change the hotkey click the *Capture hotkey* button and press the new hotkey. The default hotkey is `F10`.

- *Capture time in seconds* Time period after which a started capture is stopped. If this value is `0` the capture will stop only through hotkey or if the captured process stops. The default capture time period is `60` seconds.

- *Delayed start in seconds* Determines the delay of the capture start after the capture hotkey is pressed. The default is `0` seconds, which means the capture starts immediately after the capture hotkey is pressed.

- *Capture performance for all processes* If enabled pressing the capture hotkey will capture all processes and create a file for each process. If this is disabled only the process of the active window is captured when the hotkey is pressed (the process which is currently in focus). If no active window can be found the capture will default to all processes.

- *Enable audio cue* Toggle to turn audible indicator on and off.

- *Select output folder* Opens a folder dialog to select a folder in which the captures should be saved. The default capture folder is `Documents\OCAT\Captures`.

- *User note for capture* A user note can be entered here which will be saved in the performance summary file, `perf_summary.csv`, for each capture.

1.2.3 Latency

- *Lag indicator hotkey* Hotkey used to change the color from black to white of the lag indicator square of the overlay. The default hotkey is `ScrollLock`.

- *Lag indicator visbility hotkey* Hotkey to display the lag indicator square in the overlay. The lag indicator square is mutually exclusive to the rest of the overlay, so they won't be rendered when the lag indicator is displayed. The default hotkey is `F6`.

- *Colored bar visibility hotkey* Hotkey to show and hide the in game overlay FCAT-style per-frame coloured bar. The default hotkey is `F8`.

1.2.4 Launch App

Allows you to inject the overlay into a single application. Once the application and the command line parameters have been selected, press *Start Application* to run it.

- *Select target executable* Opens a file dialog to select an executable file that should be started with the OCAT overlay. It is possible to start a UWP app but the overlay will not react to key input. The capture will work correctly.

- *Select working directory* Opens a folder dialog to select a folder that should be used as working directory for the executable.

- *Commandline arguments* Additional command line arguments to start the executable with.

- use **steam://run/<AppId>** as a command line argument to prevent the game restarting via the Steam client. Make sure the Steam AppId is the correct one for the selected application and that the Steam client is running.

Note that most games that run via Steam (or other launchers like UPlay) start the respective launcher and terminate afterwards. The launcher will then call the executable which won't be detected by OCAT using this option. You should use the global overlay injection (*Start overlay*) in these cases.

1.2.5 Visualize

Allows the visualization of the captures for the following metrics: frame times, reprojection times (VR only), and the overall capture statistics for missed frames, average FPS, average frame times, average reprojection times (VR only) and 99th-percentile frame times.

- *Select capture file to visualize* Opens a file dialog to select a capture file whose data should be visualized.

- *Visualize* Opens the visualization window. Multiple visualization windows can be open simultaneously.

1.2.6 Visualization Window

Displays the frame graphs of the loaded captures.

Home

- *Select capture file to add* Opens a file dialog to select a capture file whose data should be visualized within the visualization window. Multiple captures can be visualized in the same window to allow direct capture-to-capture comparisons.

- *Load* Loads the selected capture file, whose data is visualized on top of the current loaded captures.

- *Select capture* Opens a list of the loaded captures. Click on a capture for selection.

- *Remove capture file* Removes the selected capture from the visualization window.

- *Save graph* Saves the current frame graph as a PDF file.

- *Show frame analysis* Shows per frame data based on the rendering time of the application and of the compositor (VR only) of the selected capture. Frames are displayed in chunks of about 500 frames, and stepping through the chunks is possible via the arrows on the top right of the frame graph.

- *Frame times* Shows a frame graph of the frame times of the loaded captures.

- *Reprojections* Shows a frame graph of the reprojection times of the loaded captures (VR only).

- *Capture statistics* Shows overall capture statistics of the loaded captures. Switch between the metrics using the arrows on the top right of the graph. The following metrics can be displayed:

- Missed frames

- Average FPS

- Average frame times

- Average reprojection times (VR only)

- 99th-percentile frame times

Controls

Displays the controls to navigate within the frame graph window.

1.2.7 General options

1.2.8 Capture

Capture starts after the hotkey button is pressed and ends with another hotkey press or if the capture time is reached. If a capture is in progress this will be displayed above the program version in the OCAT configuration and the overlay, if enabled, shows a red dot.

- If no capture is in progress the hotkey for starting a capture is shown (default: `F10`) above the program version in the OCAT configuration.

- Which processes are captured depends on the *Capture performance for all processes* option.

1.2.9 Capture files

Captures are saved by default in the `Documents\OCAT\Captures` folder. The output folder can be changed via the `Select output folder` option under the Capture tab. A detailed `.csv` file is created for each capture per supported provider set. Following provider sets are supported:

- `DXGI` for desktop applications

- `SteamVR` for VR games based on the openvr SDK compositor

- `OculusVR` for VR games based on the LibOVR SDK compositor

- `WMR` for Windows Mixed Reality VR games based on the DWM compositor

A summary for each capture can be found in the `perf_summary.csv` file.

An empty capture file can be caused by disabling the *Capture performance for all processes* option and focusing a different process when pressing the capture hotkey.

1.2.10 Capture config

The capture config file `captureConfig.json` can be found in `Documents\OCAT\Config`. The ETW provider sets can be individually enabled and disabled, further individual capture details can be provided for each set. If the `Default` or an invalid capture detail is specified, the capture detail falls back to `Verbose`. If an entry for a provider set is missing, it is by default enabled and uses the `Verbose` capture detail. On the first run, OCAT will generate a `captureConfig.json` file. To restore the default settings, delete the capture config file. A new one will be generated on the next run. The capture detail options are `Simple`, `Normal` and `Verbose`.

1.2.11 Denylist

Applications can be excluded from DLL-Injection through the denylist based on the executable name. The denylists, a default and a user denylist, can be found in `Documents\OCAT\Config`. The default denylist is named `defaultDenyList.txt`. The user denylist that you can edit is called `userDenyList.txt` All processes on the denylists don't show the overlay, and no captures are created. On the first run, OCAT will generate or update the default denylist and generate a dummy user denylist for you to start editing. You should add executables to the user denylist to make sure they won't get overwritten when OCAT is updated. Each line must contain one executable name (case insensitive).

1.2.12 Logs

Logs are saved in `Documents\OCAT\Logs`. The logs include:

- `PresentMonLog` containing information about the capturing and start of processes

- `GlobalHook32Log` and `GlobalHook64Log` information about the state of the global hook processes

- `GameOverlayLog` information about all injected DLLs

1.2.13 Known Issues

- Windows 7: PresentMon is not creating captures.

- UWP: Global hooking for overlay does not work.

- UPlay: The overlay does not work with UPlay games due to security mechanisms. This applies both for the global and the explicit hook. The capture function works fine.

- Steam: DOOM, Wolfenstein 2: The New Colossus, Rise of the Tomb Raider (and many others): The explicit hook for the overlay will only work if **steam://run/<AppId>** is parsed as commandline argument, to prevent a relaunch of the game by Steam. The global hook and capture function work normally.

- Final Fantasy XV: the global hook does not work, use the explicit hook with **steam://run/<AppId>**.

- Frostpunk: the global hook does not work, use the explicit hook

- SteamVR Battlezone: HMD overlay does not work with the global hook. Use the explicit hook for enabling the overlay within the HMD.

- Rise of the Tomb Raider, DX12: overlay can flicker on Nvidia GPU

- System Specs information in capture files: Currently, GPU memory clock is only reported on AMD systems, and for Intel we only report the GPU family rather than the specific GPU model. We detect GPU core clock and memory size on all vendors.

1.3 Changelog

1.3.1 1.6.2 - 2021-12-21

Added

- Option to set working directory when launching app from within OCAT

Changed

- Updated Windows SDK and Vulkan SDK
- Updated GPUDetect

Fixed

- Fixed several bugs that affected overlay compatibility with a number of games

1.3.2 1.6.1 - 2020-12-07

Added

- Support for RDNA and RDNA2 GPUs
  - Updated AGS to v6.0
- Resolution information gets also retrieved in window mode now

Fixed

- Fixed several bugs

1.3.3 1.6 - 2019-12-10

Added

- Option to disable the overlay while taking a capture
  - Reduces the overhead of the overlay to get more accurate capture results

Fixed

- Fixed some compatibility issues

1.3.4 1.5.1 - 2019-07-25

Fixed

- DX overlay compatibility issues

1.3.5 1.5 - 2019-06-25

Added

- Lag indicator overlay
  - Mutually exclusive to rest of overlay
  - Changes color on lag indicator hotkey signal
- Estimated driver lag metric in performance summary and verbose log files
- Resolution information in performance summary and verbose log files
- Audible indicator toggle
- Option to require ALT + hotkey combination instead of single hotkey only

Changed

- UI has now a latency tab with the lag indicator hotkeys and the FCAT-style per-frame coloured bar visibility hotkey

Fixed

- Fixed some hotkey issues causing it to not work correctly with a bunch of games
- Vulkan overlay compatibility with other Vulkan layers
- Proper usage of user blacklist

1.3.6 1.4 - 2019-03-15

Notes

- New version numbering scheme: major.minor.build (used to be major.minor.0.build)
    - That pesky zero broke things so we nuked it from orbit

Added

- Audible indicators for starting and stopping recording
    - Helps when the overlay isn't compatible or available
- Overlay now prints the graphics API being used
- Rolling plot of frame times added to overlay
- 95th and 99.9th percentile frame times in the performance summary
- FCAT-style per-frame coloured bar

Changed

- Hotkey hooking method changed to Windows' global hooking

Fixed

- Windows 7 compatibility
- Destination folder for captures is properly remembered between launches
- Properly deactivate the Vulkan overlay layer on OCAT crash

1.3.7 1.3.0 - 2018-12-13

Notes

- Please make sure to uninstall any previous release before installing 1.3.0
    - There is a known issue that prevents the installer from succeeding that will be fixed in a future release!

Added

- Reworked UI
    - Changed to make it much more intuitive to use
        * New Overlay, Capture, Launch App and Visualize tabs
        * Overlay tab controls overlay configuration
        * Capture tab controls capture settings
        * Launch App tab controls overlay injection settions for a single application
        * Visualize tab launches the visualizer!

* Read OCAT usage for more detailed information

- User-supplied blacklist
  - OCAT maintains its own internal blacklist, but also lets you provide your own
    * That ensures OCAT doesn't remove your own blacklist settings when OCAT is updated
    * See Blacklist for more detailed information
- Launching Steam apps via Steam AppId
  - Allows OCAT to work with many more Steam games and lets the explicit hook work in more cases
  - Read Launch App for more detailed information

Changed

- System specifications added to the first line of the verbose log

Fixed

- Lots of game and application compatibility bugs!
  - See GitHub issues and the new Steam AppId support for more details

1.3.8 1.2.0 - 2018-08-18

Added

- New settings options
  - Overlay position is adjustable
  - Recording output path can be specified
  - Custom user notes for summaries
  - Recording delay setting
  - Recording detail level (simple, normal, verbose)
- Red dot in the overlay to denote recording
- VR support!
  - Overlay is now shown inside the HMD for OpenVR and libOVR supported devices
  - HTC Vive, Oculus devices, Windows Mixed Reality all supported
  - Statistics support for WMR applications via PresentMon
  - Custom ETW logging for SteamVR and Oculus compositor providers
  - New configuration to disable event logging for VR compositors
    * Read Capture Config
- Visualisation tool
  - Visualise frame times, reprojections for HMD systems and common session statistics
  - Detailed session visualisation is available using the Select Session tab

- – Visualise multiple session recordings together
- – Save visualised sessions as PDF
- System information
  - – Where possible, OCAT now collects detailed system information including
  - – Mainboard, OS, CPU, RAM, GPU driver version, number of GPUs
  - – Detailed GPU information where possible:
  - – AMD: GPU name, core clock, memory clock, memory size
  - – Nvidia: GPU name, core clock, memory size
  - – Intel: GPU family, core clock, memory size

Changed

- OCAT settings are now always visible
- Updated to Vulkan SDK 1.1.82.1
- Updated blacklist
- Update application icon that's more visible on a darker taskbar
- Vulkan overlay now uses an implicit Vulkan layer for the global hook
- Removed support for 32-bit Windows (can still record 32-bit games)

Fixed

- Various game compatibility bugs, see GitHub issues for more details

1.3.9 1.1.0 - 2017-08-09

Added

- Brand new UI!
- New combined summary data
- Toggle support for the overlay
  - – Hotkey is P

Changed

- Documentation now in Sphinx
  - – http://ocat.readthedocs.io/en/latest/
- PresentMon now sourced as a git subtree
- Removed the VS2015 build
- Overlay and PresentMon functionality separated for reliability
- Updated to use Vulkan SDK 1.0.54

Fixed

- Recordings now stop after a detected timeout
- Recording should still work even if the overlay doesn't
    - Allows recording even if the overlay won't work
    - Fixes Battlefield 1 and Borderlands 2 among others

1.3.10 1.0.1 - 2017-05-23

Added

- Continuous integration via AppVeyor
- Redesigned logging and debug system
- Improved documentation on building OCAT from source
- Proper marking of error codes
- Changelogs for GitHub releases!

Changed

- Blacklisted UplayWebCore and UbisoftGameLauncher
- Blacklisted Firefox
- Blacklisted RadeonSettings
- Improved DXGI swapchain handling
- Recording hotkey is now F12

Fixed

- Windows 10 Creators Update incompatibility via a PresentMon fix
- Prey on Windows incompatibility
- Doom and The Talos Principle (both Vulkan) incompatibility

1.4 Building OCAT

1.4.1 Prerequisites

- Visual Studio 2017
- Vulkan SDK
- Python 3.6
- .NET 4.5
- WiX Toolset 3.11

OCAT Version 1.6.2 builds against Vulkan SDK 1.2.182.0.

1.4.2 Build

Open Powershell in an appropriate directory and perform the following steps:

```
git clone https://github.com/GPUOpen-Tools/OCAT
cd .\OCAT\
.\pre-build.ps1
.\build.ps1
```

The pre-build script downloads the redistributable files necessary for building the installer. You can use the Visual Studio solution `OCAT.sln` afterwards. The build script performs the necessary steps to create OCAT as well as the installer. After a successful build you can find the artifact in `OCAT-Installer\bin\x64\Release\OCAT.exe`.

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1.5.1 MIT License

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1.5.2 gameoverlay

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https://github.com/crosire/gameoverlay

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1.5.3 Minhook

https://github.com/TsudaKageyu/minhook

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1.5.4 Hacker Disassembler Engine 32 C

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1.5.6 PresentMon

https://github.com/GameTechDev/PresentMon

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1.5.7 RenderDoc

https://github.com/baldurk/renderdoc

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1.5.9 OxyPlot

http://www.oxyplot.org/

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1.5.10 JSON for Modern C++

https://github.com/nlohmann/json

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1.5.11 Oculus VR

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1.5.12 OpenVR SDK

https://github.com/ValveSoftware/openvr

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7. TERM AND TERMINATION.

This Agreement and your licenses hereunder shall become effective upon the Effective Date and shall remain in effect unless and until terminated as follows: (i) automatically if you breach any of the terms of this Agreement; or (ii) by either party upon written notice if the other party becomes the subject of a voluntary or involuntary petition in bankruptcy or any proceeding relating to insolvency, receivership, liquidation or composition for the benefit of creditors, if that petition or proceeding is not dismissed with prejudice within sixty (60) days after filing, or if a party ceases to do business; (iii) by you, upon ceasing to use the Licensed Software provided under this Agreement; or (iv) by NVIDIA upon written notice if you commence or participate in any legal proceeding against NVIDIA, with respect to the Licensed Software that is the subject of the proceeding during the pendency of such legal proceeding. Termination of this Agreement shall not release the parties from any liability which, at the time of termination, has already accrued or which thereafter may accrue with respect to any act or omission before termination, or from any obligation which is expressly stated in this Agreement to survive termination. Notwithstanding the foregoing, the party terminating this Agreement shall incur no additional liability merely by virtue of such termination. Termination of this Agreement regardless of cause or nature shall be without prejudice to any other rights or remedies of the parties and shall be without liability for any loss or damage occasioned thereby. Upon any expiration or termination of this Agreement (i) you must promptly discontinue use of the Licensed Software, and (ii) you must promptly destroy or return to NVIDIA all copies of the Licensed Software and all portions thereof in your possession or control, and each party will promptly destroy or return to the other all of the other party's Confidential Information within its possession or control, provided that your prior distributions in accordance with this Agreement are not affected by the expiration or termination of this Agreement. Upon written request, you will certify in writing that you have complied with your obligations under this section. Sections 2 through 8 will survive the expiration or termination of this Agreement for

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8.2 Audit. During the term of this Agreement and for a period of three (3) years thereafter, you will maintain complete and accurate books and records regarding use of the Licensed Software and your performance and administration of this Agreement. During such period and upon written notice to you, NVIDIA or its authorized third party auditors subject to confidentiality obligations will have the right to inspect and audit your Enterprise books and records for the purpose of confirming your compliance with the terms of this Agreement. Any such inspection and audit will be conducted during regular business hours, in a manner that minimizes interference with your normal business activities, and no more frequent than annually unless non-compliance was previously found. If such an inspection and audit reveals an underpayment of any amounts payable to NVIDIA, then you will promptly remit the full amount of such underpayment to NVIDIA, including interest that will accrue (without the requirement of a notice) at the lower of 1.5% per month or the highest rate permissible by law. If the underpaid amount exceeds five percent (5%) of the amounts payable to NVIDIA for the period audited and/or such an inspection and audit reveals a material non-conformance with the terms of this Agreement, then you will also pay NVIDIA's reasonable costs of conducting the inspection and audit. Further, you agree that the party delivering the Licensed Software to you may collect and disclose to NVIDIA (subject to confidentiality obligations) information for NVIDIA to verify your compliance with the terms of this Agreement including (without limitation) information regarding your usage of the Licensed Software.

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8.5 Injunctive Relief. The parties agree that a breach of any of the promises or agreements contained in this Agreement may result in irreparable and continuing injury for which monetary damages would not be an adequate remedy and therefore the parties are entitled to seek injunctive relief as well as such other and further relief as may be appropriate.

8.6 Waiver. The failure by either party to enforce its rights under this Agreement at any time for any period will not constitute a waiver of future enforcement of that right or any other right. Any waiver will be effective only if in writing and signed by duly authorized representatives of each party.

8.7 Severability. If for any reason a court of competent jurisdiction finds any provision of this Agreement invalid or unenforceable, that provision of this Agreement will be enforced to the maximum extent permissible so as to effect the intent of the parties, and the other provisions of this Agreement will remain in full force and effect.

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8.9 Force Majeure. Neither party will be responsible for any failure or delay in its performance under this Agreement to the extent due to causes beyond its reasonable control, including, but not limited to, acts of God, fire, flood, war, earthquake, environmental conditions, governmental action, acts of civil or military authority, riots, wars, sabotage, strikes, compliance with laws or regulations, strikes, lockouts or other serious labor disputes, or shortage of or inability to obtain material or equipment for so long as such event of force majeure continues in effect.

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8.11 General. This Agreement constitutes the entire agreement of the parties with respect to the subject matter hereto and supersede all prior negotiations, conversations, or discussions between the parties relating to the subject matter hereto, oral or written, and all past dealing or industry custom. Any notice delivered by NVIDIA to you under this Agreement will be delivered via mail, email or fax. Any additional and/or conflicting terms and conditions on purchase order(s) or any other documents issued by you are null, void, and invalid. This Agreement and the rights and obligations hereunder may not be assigned by you, in whole or in part, including by merger, consolidation, dissolution, operation of law, or any other manner, without written consent of NVIDIA, and any purported assignment in violation of this provision shall be void and of no effect. Each party acknowledges and agrees that the other is an independent contractor in the performance of this Agreement, and each is solely responsible for all of its employees, agents, contractors, and labor costs and expenses arising in connection therewith. This Agreement will be governed by and construed under the laws of the State of Delaware and the United States without regard to the conflicts of law provisions thereof and without regard to the United Nations Convention on Contracts for the International Sale of Goods. The parties consent to the personal jurisdiction of the federal and state courts located in Santa Clara County, California. If one or more provisions of this Agreement are held to be unenforceable under applicable law, such provision shall be excluded from this Agreement and the balance of this Agreement shall be interpreted as if such provision were so excluded and shall be enforceable in accordance with its terms. Any amendment or waiver under this Agreement must be in writing and signed by representatives of both parties.

1.5.15 GPUDetect

https://github.com/GameTechDev/gpudetect

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1.5.16 Sound files

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