

# Intel® Graphics Performance Analyzers (Intel® GPA) 2018 R3 Release Notes

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Thank you for choosing the Intel® Graphics Performance Analyzers (Intel® GPA).

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## Introduction

Intel® GPA provides tools for graphics analysis and optimizations for making games and other graphics-intensive applications run even faster. The tools support the platforms based on the latest generations of Intel® Core™ and Intel Atom® processor families, for applications developed for Windows\*, Ubuntu\*, or macOS\*.

Intel® GPA provides a common and integrated user interface for collecting performance data. Using it, you can quickly see performance opportunities in your application, saving time and getting products to market faster.

For detailed information and assistance in using the product, refer to the following online resources:

- [Home Page](#) - view detailed information about the tool, including links to training and support resources, as well as videos on the product to help you get started quickly.
- [Get Started Guide](#) - get the main features overview and learn how to start using the tools on different host systems.
- [Training and Documentation](#) - learn at your level with Getting Started guides, videos and tutorials.
- [User Guide for Windows\\* Host](#) - get details on how to analyze Windows\* and Android\* applications from a Windows\* system.
- [User Guide for macOS\\* Host](#) - get details on how to analyze Android\* or macOS\* applications from a macOS\* system.
- [User Guide for Ubuntu\\* Host](#) - get details on how to analyze Android\* or Ubuntu\* applications from an Ubuntu\* system.
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- [Support Forum](#) - report issues and get help with using Intel® GPA.

## What's New

Intel® GPA 2018 R3 offers the following new features:

### **New Features for Analyzing All Graphics APIs**

#### **Graphics Frame Analyzer**

- Coloring by bottlenecks is added to the Bar Chart and enables bottlenecks to be easily identified without clicking on each event. The legend is available to the right of the Bar Chart.

### **New Features for Analyzing Microsoft DirectX\* Applications**

#### **Graphics Frame Analyzer**

- New resource viewing mode is added to the existing tiled mode. Table mode shows additional information for each resource, filters, sorts, and groups all resources used by selected events.
- Modification of Draw, Dispatch and Clear call parameters for DirectX 11 and DirectX 12 frames is added. Such modification enables changing input geometry, the number of computing threads or a clear color.
- Format modification experiment for DirectX 11 Shader Resource View is added. You can change a format of the selected texture for any other format from the list of compatible formats and check the performance difference.
- DirectX 11 predication support is added.
- DirectX 11 tiled resources support is added.
- Pixel History supports DirectX 12 layered textures (2D arrays and 3D textures).

- Discard instructions in HLSL are handled by Pixel History for DirectX 11 applications.
- Dynamic geometry is supported for DirectX 11 and DirectX 12 frames. Draw call geometry generated inside a frame, for instance by preceding Dispatch, is now shown correctly.
- DXGI 1.6 is supported for DirectX 12 applications.
- Global Memory metrics are available for AMD\* Radeon RX Vega M GH graphics (in the Intel® NUC KIT NUC8I7HVK).

## **New Features for Analyzing macOS Metal\* Applications**

### **Graphics Frame Analyzer for Metal**

- Textures bound to vertex and compute shaders are shown.
- New Experiments added:
  - 2x2 Texture experiment can be applied to a selected input texture.
  - Texture can be clamped to a selected MIP-map level.
  - Wireframe mesh can be shown for a render target.
  - Render State can be changed.
  - Resources can be flipped vertically.
- Opacity of the Fast Scrub Mode overlay can be changed with an alpha slider.
- Event ranges can be shift-selected.
- API log can be filtered by type and by substring.

## **New Features for Analyzing OpenGL\* Applications**

### **New Platforms**

- GPU Duration metric is supported on Ubuntu\* 18.04.

## New Features for Analyzing Android\* OpenGL ES Applications

### System Analyzer

- gpa\_console client enumerates all available Android\* activities including internal activities.

## System Requirements and Supported Platforms

The minimum system requirements are:

- **Host Processor:** Intel® Core™ Processor
- **Target Processor:** See the list of supported Windows\* and Android\* devices below
- **System Memory:** 8GB RAM
- **Video Memory:** 512MB RAM
- **Minimum display resolution for client system:** 1280x1024
- **Disk Space:** 300MB for minimal product installation

The table below shows platforms and applications supported by Intel® GPA 2018 R3

<b>Target System (the system where your game runs)</b>	<b>Host System (your development system where you run the analysis)</b>	<b>Target Application (types of supported applications running on the target system)</b>
Windows* 7 SP1/8.1/10	Windows* 7 SP1/8.1/10	Microsoft* DirectX* 9/9Ex, 10.0/10.1, 11.0/11.1/11.2/11.3/11.4
Windows* 10	Windows* 10	Microsoft* DirectX* 12, 12.1
Ubuntu* 16.04, 18.04	Ubuntu* 16.04, 18.04	OpenGL* 3.2, 3.3, 4.0, 4.1 Core Profile

macOS* 10.12 and 10.13	macOS* 10.12 and 10.13	OpenGL* 3.2, 3.3, 4.0, 4.1 Core Profile and Metal* 1 and 2
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Intel® GPA does not support the following Windows\* configurations: All server editions, Windows\* 8 RT, or Windows\* 7 starter kit.

Although the tools may appear to work with the OpenGL API on the Windows\* platform, this API is not officially supported on Windows\* platforms. Some features and metrics may not be available on unsupported platforms.

## Supported Windows\* Graphics Devices

Intel® GPA supports the following graphics devices as targets for analyzing Windows\* workloads. All these targets have enhanced metric support:

Target	Processor
Intel® UHD Graphics 630	8th generation Intel® Core™ processor
Intel® UHD Graphics 630	7th generation Intel® Core™ processor
Intel® UHD Graphics 620	7th generation Intel® Core™ processor
Intel® HD Graphics 620	7th generation Intel® Core™ processor
Intel® HD Graphics 615	7th generation Intel® Core™ m processor
Intel® HD Graphics 530	6th generation Intel® Core™ processor
Intel® HD Graphics 515	6th generation Intel® Core™ m processor
Iris® graphics 6100	5th generation Intel® Core™ processor

Target	Processor
Intel® HD Graphics 5500 and 6000	5th generation Intel® Core™ processor
Intel® HD Graphics 5300	5th generation Intel® Core™ m processor family
Iris® Pro graphics 5200	4th generation Intel® Core™ processor
Iris® graphics 5100	4th generation Intel® Core™ processor
Intel® HD Graphics 4200, 4400, 4600, and 5000	4th generation Intel® Core™ processor

Although the tools may appear to work with other graphics devices, these devices are unsupported. Some features and metrics may not be available on unsupported platforms. If you run into an issue when using the tools with any supported configuration, please report this issue through the [Support Forum](#).

## Driver Requirements for Intel® HD Graphics

When running Intel® GPA on platforms with supported Intel® HD Graphics, the tools require the latest graphics drivers for proper operation. You may download and install the latest graphics drivers from <http://downloadcenter.intel.com/>.

Intel® GPA inspects your current driver version and notifies you if your driver is out-of-date.

## Installation Notes

### Installing Intel® GPA

Download the Intel® GPA installer from the [Intel® GPA Free Downloads](#).

If you use the product in a host/target configuration, install Intel® GPA on both systems. For more information on the host/target configuration, refer to [Best Practices](#).

## Installing Intel® GPA on Windows\*

To install the tools on Windows\*, download the \*.msi package from the [Intel® GPA Free Downloads](#) and run the installer file.

## Installing Intel® GPA on Ubuntu\*

To install Intel® GPA on Ubuntu\*, download the .sh file from the [Intel® GPA Free Downloads](#) and run the installer script.

## Installing Intel® GPA on macOS\*

To install the tools on macOS\*, download from the [Intel® GPA Free Downloads](#) and run the .pkg installer.

## Technical Support and Troubleshooting

For technical support, including answers to questions not addressed in the installed product, visit the [Support Forum](#).

## Known Issues and Limitations

- Full Intel GPA metrics are not supported on macOS\* 10.13.4 for Skylake-based and Kaby Lake-based Mac Pro systems. For full metric support, please do not upgrade to macOS\* 10.13.4.

- Playback of the Metal stream files captured with earlier Intel® GPA versions is not supported. Old Metal stream files can be converted to the new stream format using the following steps:
  1. Open Terminal and change the directory to  
/Applications/Intel/FrameAnalyzer.app/Contents/Resources/metal.
  2. Capture a new stream of the old player running the .gpa\_stream file that you want to convert by the following command:

```
1 | ./gen2/gpa-capture ./gpa-playback --layer capture -- <path-to-old-.g
```

3. The newly converted stream is automatically added to ~/Documents/GPA/ and is displayed in the Graphics Frame Analyzer open file dialog.
- Applications, dynamically linked to Microsoft Visual C++ Runtime Library, Version 14.0 or higher, cannot be launched with Auto-Detect Launched Applications Mode enabled on Windows\* 7 platforms. You can start the application directly from Graphics Monitor or start a command line and launch the target application from it.
  - macOS users who are running OS X El Capitan or newer must disable System Integrity Protection (SIP) in order to profile Steam applications. If SIP is enabled on your machine, a message will appear at the top of Graphics Monitor directing you to disable it. If you would prefer not to disable SIP but need to profile a Steam application, use the following process:
    1. Launch and sign into Steam
    2. Locate the executable of the desired application and copy the location, it typically looks something like this:

```
1 | /Users/YOUR_USER_NAME/Library/Application\ Support/Steam/steamapps/c
```

3. Launch Graphics Monitor
4. Paste the location of desired application in the first input box and hit start

5. GPA will now be injected into the executable, allowing for live profiling and Trace/Frame Capture

- To collect system events in Graphics Trace Analyzer on Windows\* platform, install the latest version of the Windows Performance Toolkit, including the Xperf Command-Line tool.
- To collect stable metrics on third party graphics, enable Developer Mode in the Windows Settings.

\*Other names and brands may be claimed as the property of others.

\*\* Disclaimer: Intel disclaims all liability regarding rooting of devices. Users should consult the applicable laws and regulations and proceed with caution. Rooting may or may not void any warranty applicable to your devices.

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For more complete information about compiler optimizations, see our [Optimization Notice](#).  
[Notify me about changes to this article.](#)



