

### 1 What's New in AMD APP SDK 3.0

#### 1.1 New features in AMD APP SDK 3.0

- Two new samples:
  - HeatPDE: sample that demonstrates heat field simulation using OpenCL 2.0 Fine Grain SVM buffer usage along with a GUI for visualizing the simulation.
  - AdvancedConvolution: An optimized implementation of separable and non-separable filters.
- Support for Microsoft Windows 10
- Support for AMD's latest 6th generation AMD A-series processors
- Support for AMD Radeon™ R9 series graphics cards
- Support for AMD FirePro™ W8100 and W9100 series graphics cards
- Enhancements and bug fixes in a few samples
- On Windows, the SDK installer provides additional feature in custom installation option to select either only OpenCL 1.x samples or only OpenCL 2.0 samples or all OpenCL samples.

#### 1.2 New features for AMD CodeXL version 1.8

The following new features in AMD CodeXL version 1.8 provide the following improvements to the developer experience:

- Support for Microsoft Windows 10
- HSA Profiler
- Power Profiling discrete GPUs
- Power Profiling API
- Offline build and analysis of OpenGL shaders
- New Static Analyzer enhanced ISA view
- GPU Debugger support up to OpenGL 4.5
- CPU Profiling for the 6th generation AMD A-series APUs
- CPU Profiling on VMWare
- Many enhancements plus more.

For information about CodeXL and about how to use CodeXL to gather performance data about your OpenCL application, such as application traces and timeline views, see the [CodeXL home page](#).

## 2 Important Notes

- OpenCL 2.0 runtime support is limited to 64-bit applications running on 64-bit Windows and Linux operating systems only.
- It is recommended to have a minimum of 1 GB Frame Buffer (FB) for applications using the Shared Virtual Memory (SVM) feature of OpenCL 2.0.
- C++ static kernel extensions supported for OpenCL 1.2 are not supported for OpenCL 2.0.
- If you are using Windows, verify that the AMDAPPSDKROOT environment variable is present. If the variable is not present, add it and set its value to one of the following:
  - C:\Program Files\AMD APP SDK\*<AMD APP SDK Version>* (for 32-bit OS)
  - C:\Program Files (x86)\AMD APP SDK\*<AMD APP SDK Version>* (for 64-bit OS)
- Check the Platform Vendor string, not the Platform Name, to determine AMD hardware. For example code that shows how to check and use the CL\_PLATFORM\_VENDOR string, see the AMD APP SDK samples.
- Driver support for 7xx generation GPUs is EOL. AMD drivers no longer support 7xx generation GPUs; this includes support for ATI Radeon™ HD and ATI Mobility Radeon™ HD 4000 series devices, ATI FirePro™ V8750, V8700, V7750, V5700, V2750, ATI Mobility FirePro™ M7740, and AMD FireStream™ 9270, 9250.
- To develop applications using deprecated OpenCL™ API calls, #define CL\_USE\_DEPRECATED\_OPENCL\_1\_1\_APIS.
- When parsing #include directives, the OpenCL compiler resolves relative paths using the current working directory of the application through the -I compiler option.
- Under Windows, making OpenCL runtime calls from dllMain can result in undefined behavior.
- The binary clinfo.exe is located in the \Windows\System32 directory.
- On Linux and Windows platforms, every GPU is assigned an ordinal number. To expose only a subset of GPUs to a specific application, make the following environmental variable definition: GPU\_DEVICE\_ORDINAL=0,1,2 ... .
- HD4XXX device support is EOL. Catalyst drivers no longer include support for these devices. See the OpenCL SDK driver and compatibility page for more details.
- See the *AMD APP SDK Samples Release Notes* for known issues and important notes for the SDK samples.
- See the AMD CodeXL release notes for known issues and important notes for the SDK samples.

## 3 Naming Convention

For Windows:

- The `__stdcall` calling convention is used for all Windows platforms.
- Function names are undecorated.
- It is not possible to use this OpenCL DLL on Windows with an application that was linked against a library using the `__cdecl` calling convention.

For Linux:

- The calling convention is `__cdecl`.

## 4 Resolved Issues

For the latest information about the resolved issues in AMD APP SDK 3.0, see the [AMD APP SDK documentation page](#).

## 5 Known Issues

For the latest information about the known issues in AMD APP SDK 3.0, see the [AMD APP SDK documentation page](#).

### 5.1 Compiler

- The compiler may accept illegal cast-to-union (GNU GCC Extension) cases. In such cases, a warning is issued. This may be fixed in a future release.
- If an argument to an OpenCL kernel function is optimized away late in the compilation process, the compiler may fail to build or produce undefined results. This occurs when either an argument gets entirely optimized away or when part of an argument gets optimized away. Part of an argument can get optimized away if two (for 64-bit data types) or four (for all other types) consecutive components of an argument are not used where the first unused component is a multiple of 2 or 4.
- The string class in the C++ Wrapper API has been deprecated and its usage is not recommended.

### 5.2 Runtime

- The OpenCL runtime currently does not validate handles to OpenCL memory objects.
- On Windows, to prevent long programs from causing a dialog to be displayed indicating that the display driver has stopped responding, disable the Timeout Detection and Recovery (TDR) feature, which is trying to detect hangs in graphics hardware. To do this, use `regedit.exe` to create the following `REG_DWORD` entry in the registry, and set its value to 0:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\GraphicsDrivers\TdrLevel
```

This avoids the constant polling by the driver and the kernel to prevent long work units from monopolizing the device. (To restore default functionality, set the `TdrLevel` to 3.)

Note that Microsoft strongly discourages disabling this feature, and only recommends doing so for debugging purposes. Do so at your own risk.

- On Linux platforms, if a kernel deadlocks the GPU, the system becomes unresponsive for a few minutes, and both the X-window server and the application become defunct processes. The system must be rebooted in order to use the GPU again.
- If the `clGetPlatformIDs()` failed error is issued with a properly installed ICD while running 32-bit code on a 64-bit system, ensure that all necessary 32-bit libraries are installed. The specifics of this vary between Linux distributions; consult your OS documentation for more information. The `libGLU.so` library is known to trigger this problem, but there may be others, depending on the specific installation.

---

**Contact**

Advanced Micro Devices, Inc.  
One AMD Place  
P.O. Box 3453  
Sunnyvale, CA, 94088-3453  
Phone: +1.408.749.4000

For AMD APP SDK:  
URL: [developer.amd.com/appsdk](http://developer.amd.com/appsdk)  
Developing: [developer.amd.com/](http://developer.amd.com/)



The contents of this document are provided in connection with Advanced Micro Devices, Inc. ("AMD") products. AMD makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. The information contained herein may be of a preliminary or advance nature and is subject to change without notice. No license, whether express, implied, arising by estoppel or otherwise, to any intellectual property rights is granted by this publication. Except as set forth in AMD's Standard Terms and Conditions of Sale, AMD assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

AMD's products are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or in any other application in which the failure of AMD's product could create a situation where personal injury, death, or severe property or environmental damage may occur. AMD reserves the right to discontinue or make changes to its products at any time without notice.

**Copyright and Trademarks**

© 2015 Advanced Micro Devices, Inc. All rights reserved. AMD, the AMD Arrow logo, ATI, the ATI logo, Radeon, FireStream, and combinations thereof are trademarks of Advanced Micro Devices, Inc. OpenCL and the OpenCL logo are trademarks of Apple Inc. used by permission by Khronos. Other names are for informational purposes only and may be trademarks of their respective owners.