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# OpenCL™ 2.0 Samples

## Demystifying OpenCL™ 2.0 features

The newest release of the AMD APP SDK contains the OpenCL 2.0 samples listed in the table below. To get started with those, [head over to the blog](#) to read more or go to the [AMD APP SDK](#) page and download the latest release.

## Samples

New Samples		
Sample	OpenCL™ 2.0 feature	Description
SVMBinaryTreeSearch	SVM Coarse Grain	demonstrates the coarse-grain Shared Virtual Memory (SVM) feature of OpenCL 2.0 using a Binary Tree search algorithm



Sample	OpenCL™ 2.0 feature	Description
SimplePipe	Pipe	demonstrates the Pipe memory object and its APIs
PipeProducerConsumerKernels	Pipe	demonstrates the Pipe as a data-sharing FIFO for a producer kernel and a consumer kernel
BuiltInScan	New Workgroup Built-in APIs	demonstrates the work group level scan and work group level broadcast features introduced in OpenCL 2.0 using the PrefixSum algorithm
ImageBinarization	Image Read and Write	demonstrates using images with read_write qualifier support, which is new in OpenCL 2.0
RecursiveGaussian_ProgramScope	Program Scope Variable	demonstrates Program Scope Variables, a new feature of OpenCL 2.0, using a Recursive Gaussian filter implementation
SimpleGenericAddressSpace	Generic Address Space	demonstrates the Generic Address Space feature introduced in OpenCL 2.0, which allows pointers to be declared without qualifying with a named address space
RangeMinimumQuery	Shared Virtual Memory pointer with offset	demonstrates passing a pointer with offset as a kernel argument using Range Minimum Query algorithm, new in OpenCL 2.0
SVMAtomicsBinaryTreeInsert	SVM Fine Grain Buffer + Platform Atomics	demonstrates the Fine Grain SVM buffer with Platform atomics using a Binary Tree node insertion algorithm
CalcPie	C++ 11 Atomics	demonstrates atomics in OpenCL 2.0. It calculates the value of Pi using MonteCarlo analysis
FineGrainSVM	SVM Fine Grain Buffer + C++ 11 Atomics	demonstrates the memory model of loads and stores with new C++11 standard, which is adopted by OpenCL 2.0 (Linux APU device)



Sample	OpenCL™ 2.0 feature	Description
FineGrainSVMCAS	SVM Fine Grain Buffer + C++ 11 Atomics	demonstrates the atomic operation “CompareAndSwap” call called “atomic_compare_exchange”, introduced in OpenCL 2.0 (adopted from C11 standards – requires Linux APU device)
RegionGrowingSegmentation	Device-side Enqueue	demonstrates how to use the device-side enqueue feature of OpenCL 2.0 for a Region Growing Segmentation algorithm
DeviceEnqueueBFS	Device-side Enqueue	demonstrates Breadth First Search implementation using the device-side enqueue feature of OpenCL 2.0.
ExtractPrimes	Device-side Enqueue + New Workgroup Built-in APIs	demonstrates the new workgroup builtins and device-side enqueue in a finding Prime number algorithm
SimpleSPIR	SPIR Consumption (Not a OpenCL 2.0 feature)	demonstrates SPIR code consumption using OpenCL APIs
SimpleDepthImage	Depth Image	demonstrates the depth Image APIs
<b>Updated Samples</b>		
Sample	OpenCL™ 2.0 feature	Description
GlobalMemoryBandwidth	Shared Virtual Memory	measures the peak-bandwidth of the device buffer. For devices on OpenCL version 2.0 and higher, it additionally shows peak bandwidth for the Shared Virtual Memory (SVM) buffer
BinarySearch_DeviceSideEnqueue	Device-side Enqueue	enhanced to use device-side enqueue for Binary Search on an OpenCL 2.0 device. Uses iterative host side enqueue for OpenCL 1.x devices
BufferImageInterop	Buffer Image Interop	updated to skip checking for the BufferImageInterop extension since OpenCL 2.0 compliant platform as it is a core feature of OpenCL 2.0



Sample	OpenCL™ 2.0 feature	Description
BufferBandwidth	Shared Virtual Memory	now also measures the SVM buffer bandwidth on a OpenCL 2.0 compliant device

The OpenCL™ 2.0 samples posted below were provided as part of the AMD APP SDK 3.0 Beta release, and accompany a series of blog posts where we attempt to demystify the most important OpenCL™ 2.0 features by investigating their significance as well as how and under what conditions they improve programmability and performance. The best way to learn about the features, of course, is to use them:

- Download and install the [latest driver for your platform here](#).
- Download the code sample(s) from the table below and run them on any of the AMD platforms listed on the driver download page (link above). See the Readme file in the sample package for further details.

## Downloads

File Name	Version	Size	Launch Date	OS	Bitness	Description
Binary Search using OpenCL 2.0 SVM						
<a href="#">SVMBinarySearchTree.zip</a>	N/A	124 KB	10/24/2014	Windows and Linux	64-bit	Sample code showing use of OpenCL 2.0 SVM feature in a binary tree search
Producer/consumer sample using OpenCL 2.0 Pipes						
<a href="#">PipeProducerConsumerKernels.zip</a>	N/A	128 KB	10/31/2014	Windows and Linux	64-bit	Sample code implementing a producer/consumer construct using OpenCL 2.0 pipes
OpenCL 2.0 Device Enqueue						
<a href="#">DeviceEnq.zip</a>	N/A	818 KB	11/17/2014	Windows and Linux	64-bit	Sample code illustrating the use of OpenCL 2.0 Device Enqueue feature



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