

1 Overview

1.1 Location \$(AMDAPPSDKSAMPLESROOT)\samples\opencl\cl\AdvancedMultiGPU

1.2 How to Run See the *Getting Started* guide for how to build samples. You first must compile the sample.

Use the command line to change to the directory where the executable is located. The pre-compiled sample executable is at \$(AMDAPPSDKSAMPLESROOT)\samples\opencl\bin\x86\ for 32-bit builds, and \$(AMDAPPSDKSAMPLESROOT)\samples\opencl\bin\x86_64\ for 64-bit builds.

Type the following command(s).

1. AdvancedMultiGPU
This runs the AES encryption algorithm on a CPU, on a single GPU, and on multiple GPUs, depending on the system's configuration.
2. AdvancedMultiGPU -h
This prints the help file.

1.3 Command Line Options Table 1 lists, and briefly describes, the command line options.

Table 1 Command Line Options

Short Form	Long Form	Description
-h	--help	Shows all command options and their respective meaning.
-e	--verify	Verify results against reference implementation.

2 Implementation Details

This sample tests concurrent execution on multi-devices using the paths listed below. Also, it prints out each test's kernel executing time.

1. Use CPU to compute.
2. Use single GPU to compute. This test is run once for each GPU found on the OpenCL platform. The API `clEnqueueMigrateMemObjects` is used to place the memory objects directly on the specific GPU device.
3. Use multiple GPUs to compute in parallel. Multiple GPUs are required for this test.

Dynamic load balancing works in the following manner. A different OpenCL context is created for each device. The data set (64*1024*512) is divided into 64 partitions; thus, each partition has a

size of 1024*512. Each GPU processes one partition at a time and is assigned a new partition when it becomes free.

This sample uses the AES encryption algorithm as the kernel.

3 References

1. [The OpenCL Specification, v 1.2](#)

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