SPEC® ACCEL_OCL Result

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Cray
(Test Sponsor: Indiana University)

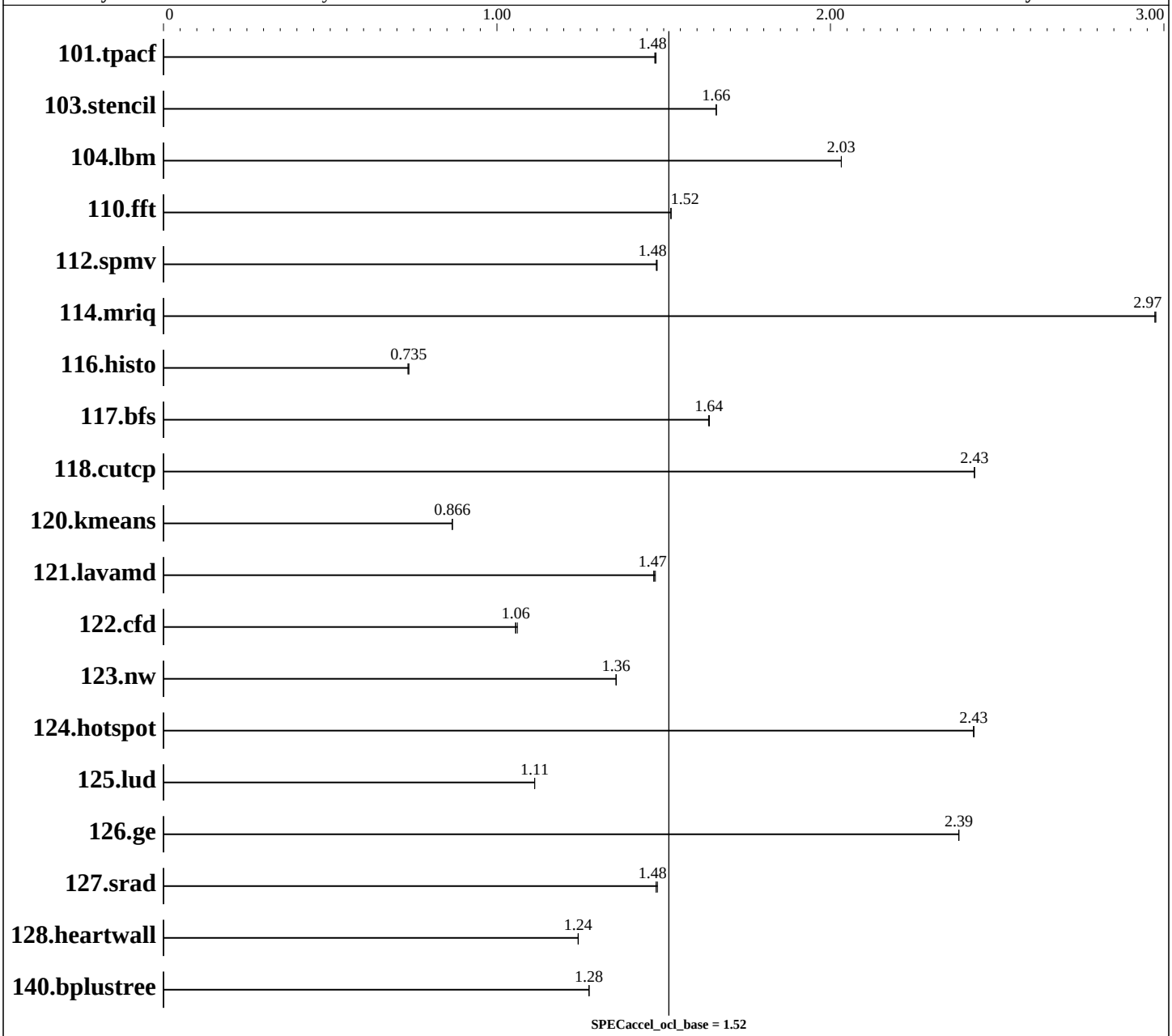
NVIDIA Tesla K20
Cray XK7

SPECaccel_ocl_peak = Not Run

SPECaccel_ocl_base = 1.52

ACCEL license: 3440A
Test sponsor: Indiana University
Tested by: Indiana University

Test date: Aug-2014
Hardware Availability: Apr-2013
Software Availability: Jun-2014



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Hardware

CPU Name:	AMD Opteron 6276
CPU Characteristics:	AMD Turbo CORE Technology up to 3.2GHz, Turbo CORE off
CPU MHz:	2300
CPU MHz Maximum:	3200
FPU:	Integrated
CPU(s) enabled:	16 cores, 1 chip, 16 cores/chip
CPU(s) orderable:	1 chip
Primary Cache:	32 KB I + 16 KB D on chip per core
Secondary Cache:	16 MB I+D on chip per chip, 2 MB shared / 2 cores
L3 Cache:	16 MB I+D on chip per chip, 8 MB shared / 8 cores
Other Cache:	None
Memory:	32 GB (4 x 8 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem:	None
Other Hardware:	None

Accelerator

Accel Model Name:	Tesla K20
Accel Vendor:	NVIDIA
Accel Name:	NVIDIA Tesla K20
Type of Accel:	GPU
Accel Connection:	PCIe 2.0 16x
Does Accel Use ECC:	yes
Accel Description:	NVIDIA Tesla K20m GPU, 2496 CUDA cores, 706MHz, 5 GB GDDR5 RAM
Accel Driver:	NVIDIA UNIX x86_64 Kernel Module 319.82

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64), Cray Linux Environment 4.2 SUSE Linux Enterprise Server 11 (x86_64) 2.6.32.59-0.7.1_1.0402.7496-cray_gem_c
Compiler:	GNU Fortran (GCC) 4.9.0
File System:	NFSv3 (IBM N5500 NAS) over Gb ethernet
System State:	Multi-user, run level 3
Other Software:	NVIDIA CUDA 5.5.20

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
101.tpacf	72.6	1.47	**72.5**	**1.48**	72.4	1.48						
103.stencil	75.4	1.66	**75.4**	**1.66**	75.4	1.66						
104.lbm	55.1	2.03	**55.1**	**2.03**	55.1	2.03						
110.fft	73.0	1.52	**72.9**	**1.52**	72.9	1.52						
112.spmv	99.3	1.48	99.5	1.48	**99.3**	**1.48**						
114.mriq	36.6	2.98	36.7	2.97	**36.7**	**2.97**						
116.histo	156	0.733	155	0.736	**155**	**0.735**						
117.bfs	71.6	1.63	**71.5**	**1.64**	71.5	1.64						
118.cutcp	40.7	2.43	40.7	2.43	**40.7**	**2.43**						
120.kmeans	116	0.866	**115**	**0.866**	115	0.866						
121.lavamd	**74.1**	**1.47**	74.2	1.47	73.9	1.48						
122.cfd	119	1.06	**119**	**1.06**	119	1.06						
123.nw	84.7	1.36	84.7	1.36	**84.7**	**1.36**						
124.hotspot	46.9	2.43	**46.9**	**2.43**	46.9	2.43						
125.lud	107	1.11	**107**	**1.11**	107	1.11						
126.ge	**65.0**	**2.39**	65.0	2.38	65.0	2.39						
127.srad	77.0	1.48	**77.1**	**1.48**	77.2	1.48						
128.heartwall	85.3	1.24	85.2	1.24	**85.2**	**1.24**						
140.bplustree	84.6	1.28	84.7	1.28	**84.7**	**1.28**						

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Platform Notes

```
Sysinfo program /N/soft/mason/specaccel-1.0/Docs/sysinfo
$Rev: 6874 $ $Date:: 2013-11-20 #$ 0953404ef7e75a5f9bbb534c6de3f831
running on nid00264 Fri Aug 22 11:41:24 2014

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/accel/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : AMD Opteron(TM) Processor 6276
      1 "physical id"s (chips)
      16 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
```

Continued on next page

Platform Notes (Continued)

```
        cpu cores : 16
        siblings  : 16
        physical 0: cores 0 1 2 3 4 5 6 7
     cache size : 2048 KB

  From /proc/meminfo
     MemTotal:       33084584 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     SUSE Linux Enterprise Server 11 (x86_64)

  From /etc/*release* /etc/*version*
     SuSE-release:
        SUSE Linux Enterprise Server 11 (x86_64)
        VERSION = 11
        PATCHLEVEL = 1
     mazama-release:
        Mazama Wed Aug 28 02:06:30 CDT 2013 on hssbld0 by bwdev
        lsb-cray-mazama-7.1.0

  uname -a:
     Linux nid00264 2.6.32.59-0.7.1_1.0402.7496-cray_gem_c #1 SMP Wed Feb 26
     05:58:57 UTC 2014 x86_64 x86_64 x86_64 GNU/Linux


  SPEC is set to: /N/soft/mason/specaccel-1.0
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /N/soft        dvs   1.9T  1.6T  247G  87% /N/soft

  Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'

  (End of data from sysinfo program)
```

Base Runtime Environment

C benchmarks:

```
    OpenCL Platform: NVIDIA CUDA, OpenCL 1.1 CUDA 4.2.1
    OpenCL Device #0: Tesla K20, v 319.82
```

C++ benchmarks:

```
    OpenCL Platform: NVIDIA CUDA, OpenCL 1.1 CUDA 4.2.1
    OpenCL Device #0: Tesla K20, v 319.82
```

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Base Compiler Invocation

C benchmarks:
gcc

C++ benchmarks:
g++

Base Optimization Flags

C benchmarks:
-O2 -I/opt/nvidia/cudatoolkit/default/include
-L/opt/cray/nvidia/default/lib64 -lcuda -lOpenCL

C++ benchmarks:
-O2 -I/opt/nvidia/cudatoolkit/default/include
-L/opt/cray/nvidia/default/lib64 -lcuda -lOpenCL

The flags file that was used to format this result can be browsed at
http://www.spec.org/accel/flags/flags-advanced.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/accel/flags/flags-advanced.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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