SPEC® ACCEL_OCL Result

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Cray
(Test Sponsor: Indiana University)

NVIDIA Tesla K20
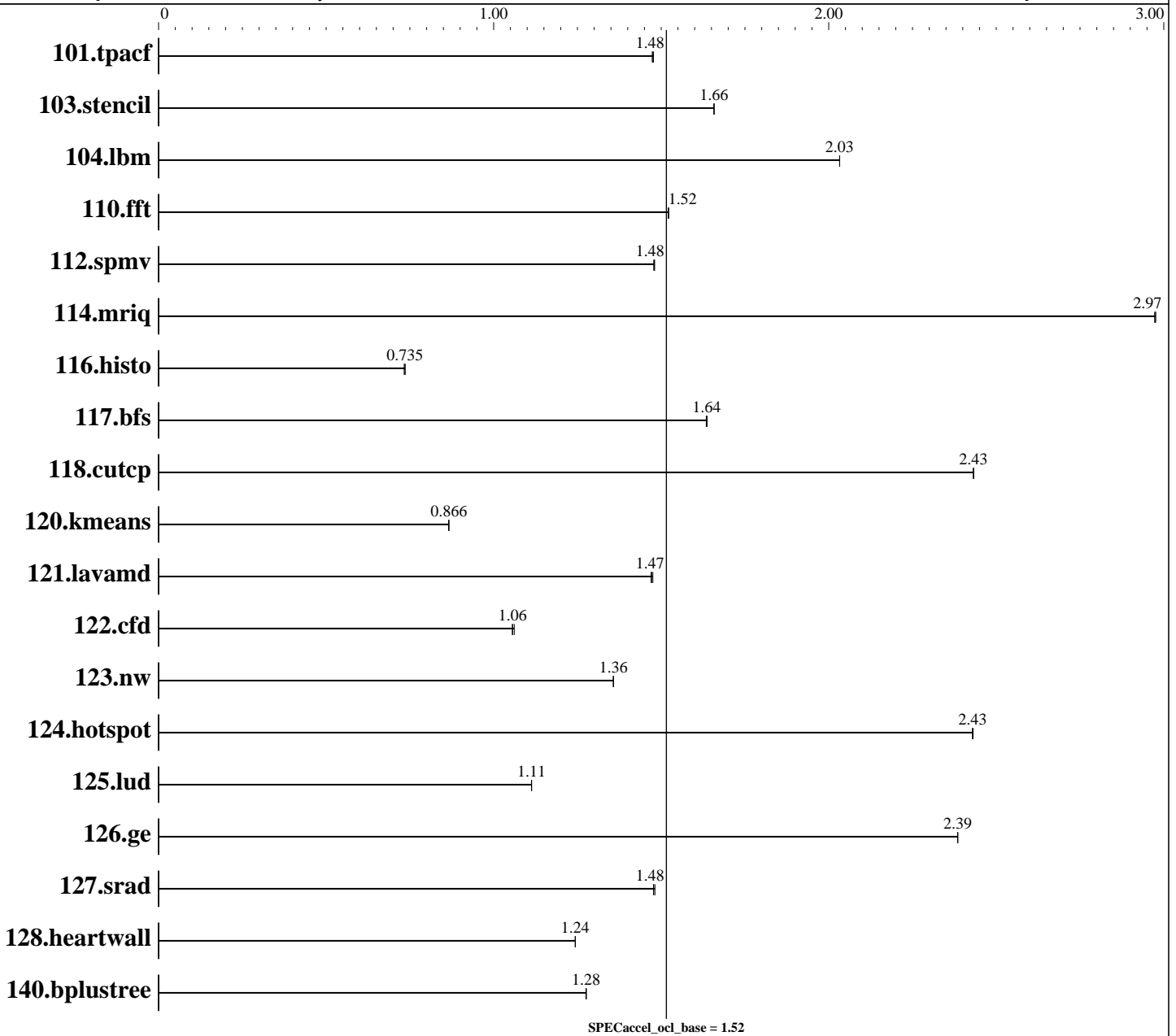## Cray XK7

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

Benchmark	Result
101.tpacf	1.48
103.stencil	1.66
104.lbm	2.03
110.fft	1.52
112.spmv	1.48
114.mriq	2.97
116.histo	0.735
117.bfs	1.64
118.cutcp	2.43
120.kmeans	0.866
121.lavamd	1.47
122.cfd	1.06
123.nw	1.36
124.hotspot	2.43
125.lud	1.11
126.ge	2.39
127.srad	1.48
128.heartwall	1.24
140.bplustree	1.28

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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.)
```

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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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