SPEC ACCEL™ OCL Result

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Cray
(Test Sponsor: Indiana University)

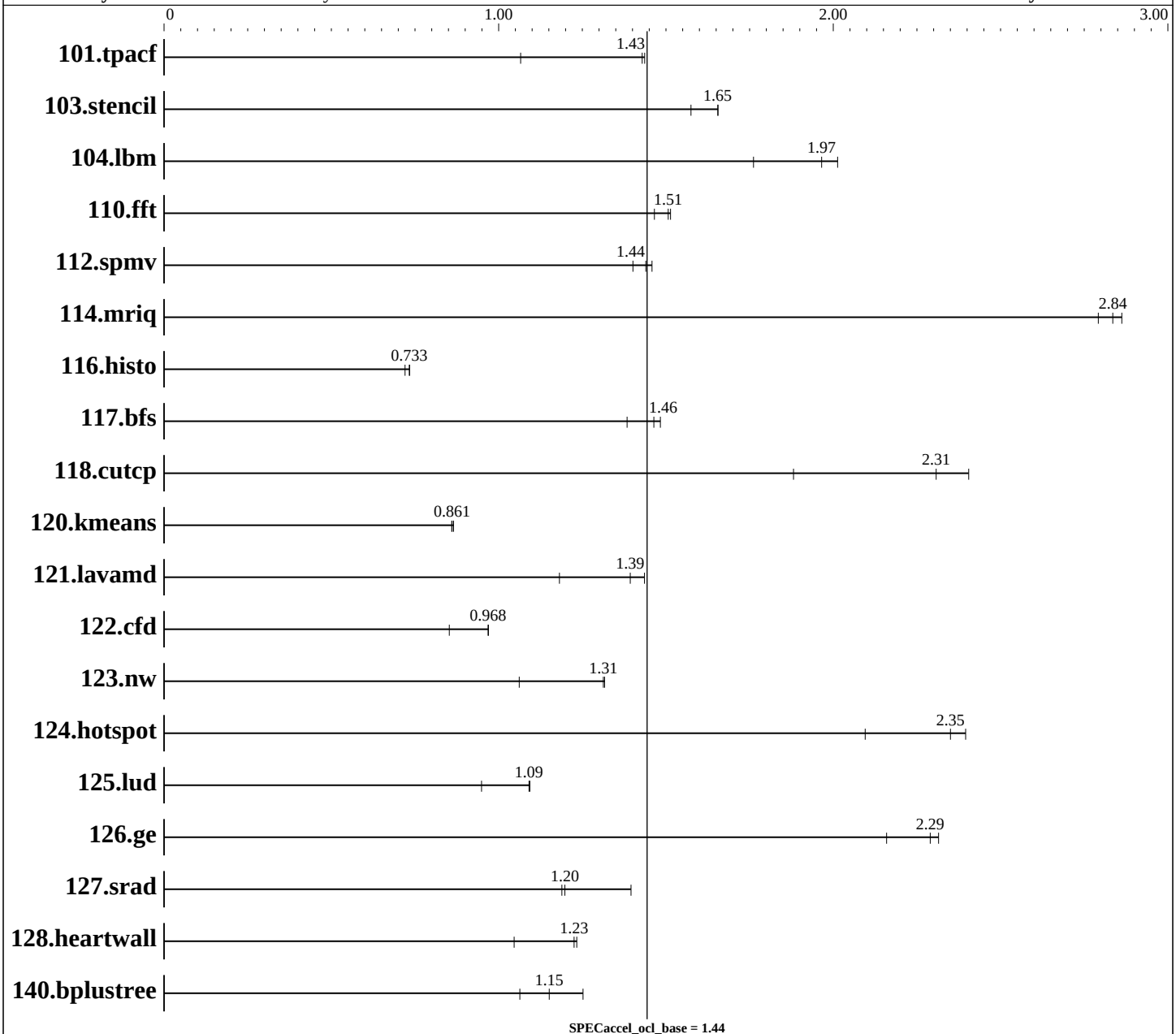
NVIDIA Tesla K20
Cray XK7

SPECaccel_ocl_peak = Not Run

SPECaccel_ocl_base = 1.44

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

Test date: May-2015
Hardware Availability: Apr-2013
Software Availability: Jul-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) 4.9.2
File System:	NFSv3 (IBM N5500 NAS) over Gb ethernet
System State:	Multi-user, run level 3
Other Software:	NVIDIA CUDA 5.5.51

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
101.tpacf	**74.9**	**1.43**	74.5	1.44	100	1.07						
103.stencil	**75.5**	**1.65**	75.5	1.66	79.4	1.57						
104.lbm	55.6	2.01	**57.0**	**1.97**	63.6	1.76						
110.fft	**73.7**	**1.51**	73.3	1.51	75.7	1.47						
112.spmv	**102**	**1.44**	101	1.46	105	1.40						
114.mriq	**38.4**	**2.84**	39.0	2.79	38.1	2.86						
116.histo	**156**	**0.733**	158	0.720	155	0.734						
117.bfs	78.9	1.48	84.5	1.38	**79.9**	**1.46**						
118.cutcp	41.2	2.40	52.6	1.88	**42.9**	**2.31**						
120.kmeans	116	0.865	**116**	**0.861**	116	0.860						
121.lavamd	92.2	1.18	**78.2**	**1.39**	75.9	1.44						
122.cfd	130	0.970	148	0.852	**130**	**0.968**						
123.nw	87.3	1.32	108	1.06	**87.6**	**1.31**						
124.hotspot	**48.5**	**2.35**	54.4	2.10	47.6	2.40						
125.lud	109	1.09	125	0.949	**109**	**1.09**						
126.ge	**67.7**	**2.29**	71.8	2.16	67.0	2.31						
127.srad	95.9	1.19	81.7	1.40	**95.2**	**1.20**						
128.heartwall	**86.5**	**1.23**	101	1.05	85.9	1.23						
140.bplustree	86.3	1.25	102	1.06	**93.8**	**1.15**						

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 nid00365 Tue May 12 14:33:46 2015

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:       33084648 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 nid00365 2.6.32.59-0.7.1_1.0402.7496-cray_gem_c #1 SMP Fri Mar 27
   21:58:55 UTC 2015 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   599T  121T  478T  21% /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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