SPEC ACCEL™ OCL Result

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Intel
(Test Sponsor: Intel Corporation)

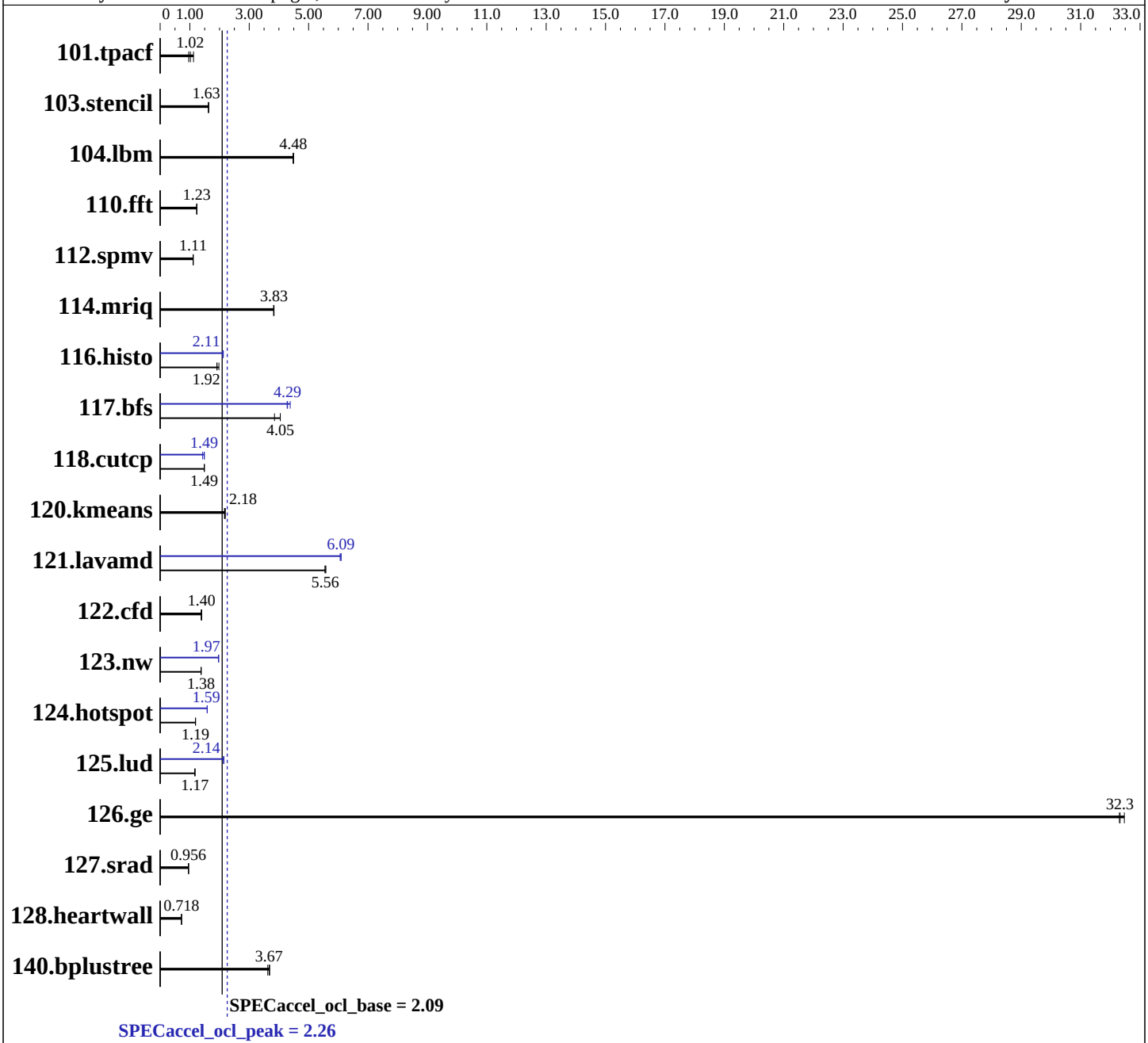
Intel Xeon E5-2697 v3
R2208WTTYC1

SPECaccel_ocl_peak = 2.26

SPECaccel_ocl_base = 2.09

ACCEL license: 13
Test sponsor: Intel Corporation
Tested by: Pavel Shelepugin, Alexander Bobyr

Test date: Feb-2015
Hardware Availability: Sep-2014
Software Availability: Feb-2015



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Hardware

CPU Name:	Intel Xeon E5-2697 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.6 GHz, 9.6 GT/s QPI, Hyper-Threading enabled
CPU MHz:	2600
CPU MHz Maximum:	3600
FPU:	Integrated
CPU(s) enabled:	28 cores, 2 chips, 14 cores/chip, 2 threads/core
CPU(s) orderable:	1-2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	35 MB I+D on chip per chip, 35 MB shared / 14 cores
Other Cache:	None
Memory:	64 GB (8 x 8 GB 2Rx4 PC4-17000R-15, ECC)
Disk Subsystem:	Panasas ActiveStor 12, PanFS 6.0
Other Hardware:	None

Accelerator

Accel Model Name:	Intel Xeon E5-2697 v3
Accel Vendor:	Intel
Accel Name:	Intel Xeon E5-2697 v3
Type of Accel:	CPU
Accel Connection:	9.6 GT/s QPI
Does Accel Use ECC:	yes
Accel Description:	2x Intel Xeon E5-2697 v3 CPUs with Hyper-Threading
Accel Driver:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.5 (Santiago) 2.6.32-358.6.2.el6.x86_64.crt1
Compiler:	Intel C++ Composer XE 2015 for Linux, Version 15.0.1.133 Build 20141023
File System:	panfs
System State:	Run level 3 (multi-user)
Other Software:	Intel OpenCL SDK 2015 Version 15.1 Build 5.0.0.57

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
101.tpacf	**105**	**1.02**	111	0.961	95.2	1.12	**105**	**1.02**	111	0.961	95.2	1.12
103.stencil	76.9	1.63	**76.7**	**1.63**	76.6	1.63	76.9	1.63	**76.7**	**1.63**	76.6	1.63
104.lbm	25.0	4.48	**25.0**	**4.48**	24.9	4.49	25.0	4.48	**25.0**	**4.48**	24.9	4.49
110.fft	89.8	1.24	**90.0**	**1.23**	90.1	1.23	89.8	1.24	**90.0**	**1.23**	90.1	1.23
112.spmv	132	1.12	133	1.11	**132**	**1.11**	132	1.12	133	1.11	**132**	**1.11**
114.mriq	28.5	3.82	28.4	3.83	**28.4**	**3.83**	28.5	3.82	28.4	3.83	**28.4**	**3.83**
116.histo	**59.5**	**1.92**	57.6	1.98	59.6	1.91	**54.0**	**2.11**	54.0	2.11	53.6	2.13
117.bfs	**28.9**	**4.05**	28.9	4.05	30.4	3.85	26.7	4.38	27.4	4.28	**27.3**	**4.29**
118.cutcp	**66.6**	**1.49**	66.6	1.49	66.6	1.49	69.2	1.43	**66.6**	**1.49**	66.5	1.49
120.kmeans	46.2	2.17	45.5	2.20	**45.9**	**2.18**	46.2	2.17	45.5	2.20	**45.9**	**2.18**
121.lavamd	19.6	5.55	**19.6**	**5.56**	19.5	5.58	17.9	6.10	18.0	6.06	**17.9**	**6.09**
122.cfd	**90.1**	**1.40**	91.3	1.38	89.9	1.40	**90.1**	**1.40**	91.3	1.38	89.9	1.40
123.nw	83.5	1.38	83.3	1.38	**83.3**	**1.38**	58.3	1.97	58.6	1.96	**58.4**	**1.97**
124.hotspot	**95.7**	**1.19**	96.0	1.19	95.6	1.19	72.0	1.58	**71.8**	**1.59**	71.8	1.59
125.lud	102	1.17	**102**	**1.17**	101	1.17	55.4	2.15	**55.6**	**2.14**	55.7	2.13
126.ge	**4.79**	**32.3**	4.80	32.3	4.77	32.5	**4.79**	**32.3**	4.80	32.3	4.77	32.5
127.srad	**119**	**0.956**	119	0.957	119	0.955	**119**	**0.956**	119	0.957	119	0.955
128.heartwall	148	0.716	147	0.721	**148**	**0.718**	148	0.716	147	0.721	**148**	**0.718**
140.bplustree	29.3	3.69	**29.4**	**3.67**	29.8	3.62	29.3	3.69	**29.4**	**3.67**	29.8	3.62

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

Peak Tuning Notes

```
The following compiler environment variables were used for the Peak run:
(the description can be found in the flags file)
 CL_CONFIG_CPU_VECTORIZER_MODE=8 for 116.histo
 CL_CONFIG_CPU_VECTORIZER_MODE=4 for 117.bfs
 CL_CONFIG_CPU_RT_LOOP_UNROLL=16 for 118.cutcp
 CL_CONFIG_USE_FAST_RELAXED_MATH=1 for 121.lavamd
```

Submit Notes

```
The config file option 'submit' was used.
'numactl' utility was used for 'submit' option.
```

Platform Notes

```
Sysinfo program /panfs/panfs3/users2/pshelepu/kit47/Docs/sysinfo
$Rev: 6874 $ $Date:: 2013-11-20 #$ 0953404ef7e75a5f9bbb534c6de3f831
running on ehk288 Tue Feb 24 02:18:44 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 : Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz
      2 "physical id"s (chips)
      56 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 14
      siblings  : 28
      physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
      physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
   cache size : 35840 KB

From /proc/meminfo
   MemTotal:       65860360 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux ehk288 2.6.32-358.6.2.el6.x86_64.crt1 #4 SMP Fri May 17 15:33:33 MDT
   2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 19 10:17

SPEC is set to: /panfs/panfs3/users2/pshelepu/kit47
   Filesystem           Type   Size  Used Avail Use% Mounted on
   panfs://36.101.211.31/users2
                        panfs   76T   49T   28T  65% /panfs/panfs3/users2

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

(End of data from sysinfo program)
```

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Base Runtime Environment

C benchmarks:
```
OpenCL Platform: Intel(R) OpenCL, OpenCL 1.2 LINUX
OpenCL Device #0: Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz, v 1.2.0.57
```

C++ benchmarks:
```
OpenCL Platform: Intel(R) OpenCL, OpenCL 1.2 LINUX
OpenCL Device #0: Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz, v 1.2.0.57
```

Base Compiler Invocation

C benchmarks:
```
icc
```

C++ benchmarks:
```
icpc
```

Base Optimization Flags

C benchmarks:
```
-O3 -xCORE-AVX2 -lintelocl
```

C++ benchmarks:
```
-O3 -xCORE-AVX2 -lintelocl
```

Peak Runtime Environment

C benchmarks:
```
OpenCL Platform: Intel(R) OpenCL, OpenCL 1.2 LINUX
OpenCL Device #0: Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz, v 1.2.0.57
```

C++ benchmarks:
```
OpenCL Platform: Intel(R) OpenCL, OpenCL 1.2 LINUX
OpenCL Device #0: Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz, v 1.2.0.57
```

Peak Compiler Invocation

C benchmarks:
```
icc
```

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Peak Compiler Invocation (Continued)

C++ benchmarks:
icpc

Peak Optimization Flags

C benchmarks:

110.fft: basepeak = yes
114.mriq: basepeak = yes
116.histo: -O3 -xCORE-AVX2 -lintelocl
117.bfs: Same as 116.histo
118.cutcp: Same as 116.histo
121.lavamd: Same as 116.histo
124.hotspot: -O3 -xCORE-AVX2 -DSPEC_ACCEL_WG_SIZE_0_0=40 -lintelocl
127.srad: basepeak = yes
128.heartwall: basepeak = yes
140.bplustree: basepeak = yes

C++ benchmarks:

101.tpacf: basepeak = yes
103.stencil: basepeak = yes
104.lbm: basepeak = yes
112.spmv: basepeak = yes
120.kmeans: basepeak = yes
122.cfd: basepeak = yes
123.nw: -O3 -xCORE-AVX2 -DSPEC_ACCEL_WG_SIZE_0_0=32 -lintelocl
125.lud: Same as 123.nw

Continued on next page

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Peak Optimization Flags (Continued)

126.ge: `basepeak = yes`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/accel/flags/EM64T_Intel150_flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/accel/flags/EM64T_Intel150_flags.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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