SPEC ACCEL™ OCL Result

Intel
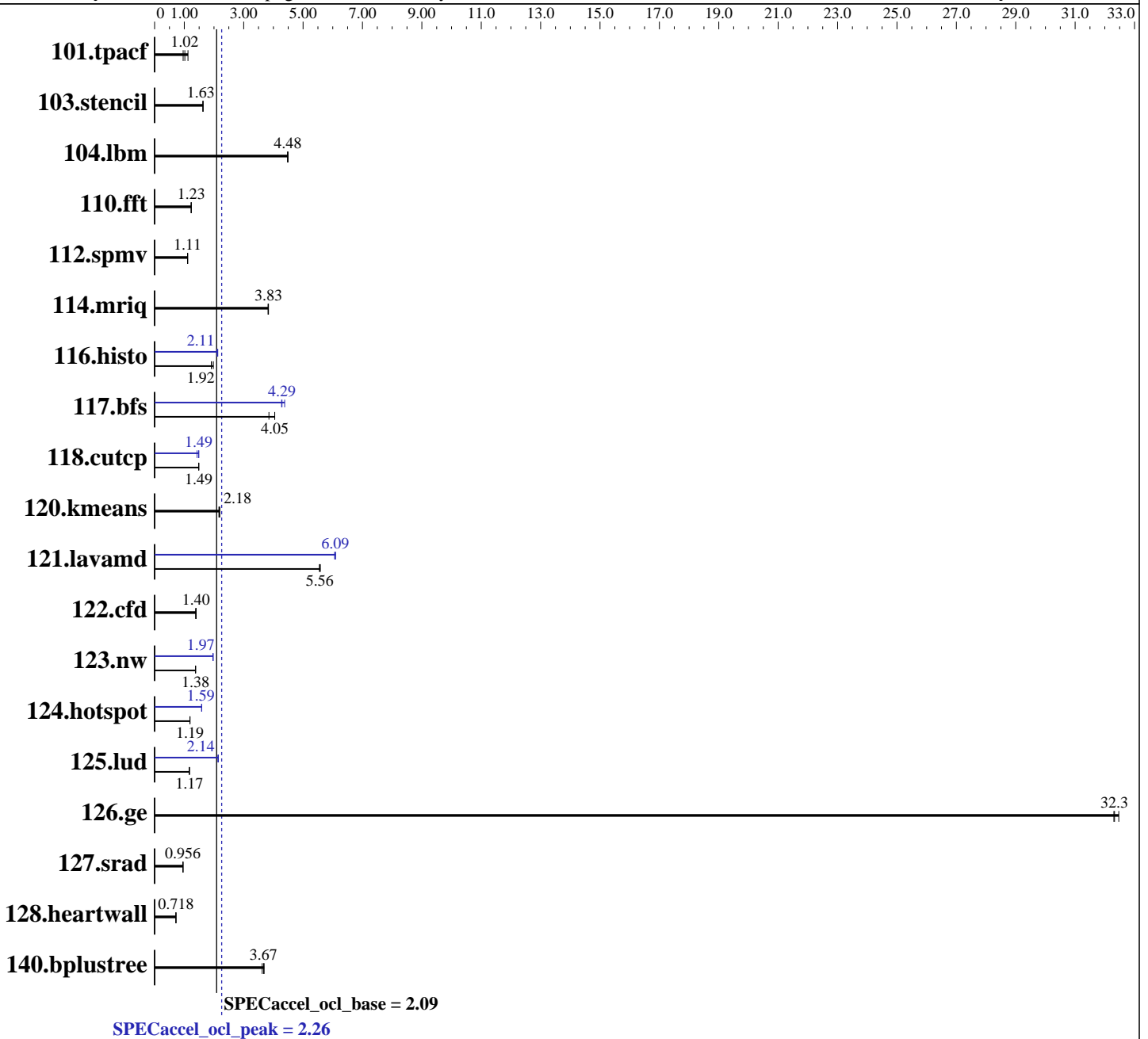(Test Sponsor: Intel Corporation)

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

Benchmark	peak	base
101.tpacf		1.02
103.stencil		1.63
104.lbm		4.48
110.fft		1.23
112.spmv		1.11
114.mriq		3.83
116.histo	2.11	1.92
117.bfs	4.29	4.05
118.cutcp	1.49	1.49
120.kmeans		2.18
121.lavamd	6.09	5.56
122.cfd		1.40
123.nw	1.97	1.38
124.hotspot	1.59	1.19
125.lud	2.14	1.17
126.ge		32.3
127.srad		0.956
128.heartwall		0.718
140.bplustree		3.67

SPECaccel_ocl_base = 2.09
SPECaccel_ocl_peak = 2.26

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spec

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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.
```

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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`

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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.

Tested with SPEC ACCEL v47.
Report generated on Wed Mar 18 11:12:29 2015 by SPEC ACCEL PS/PDF formatter v1290.
Originally published on 18 March 2015.