SGI
NVIDIA Tesla K40m
SGI Rackable C2110G-RP5 (Intel Xeon E5-2697 v2, 2.70 GHz)

SPECaccel_ocl_peak = Not Run
SPECaccel_ocl_base = 1.92

ACCEL license: 14
Test sponsor: SGI
Tested by: SGI

Test date: Feb-2014
Hardware Availability: Nov-2013
Software Availability: Nov-2013

SPECaccel_ocl_base = 1.92
### SPEC ACCEL_OCL Result

**SGI**

**NVIDIA Tesla K40m**

SGI Rackable C2110G-RP5 (Intel Xeon E5-2697 v2, 2.70 GHz)

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Accelerator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon E5-2697 v2</td>
<td><strong>Accel Model Name:</strong> Tesla K40m</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong> Twelve Core, 2.7 GHz, 8.0 GT/s QPI</td>
<td><strong>Accel Vendor:</strong> NVIDIA</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong> 2700</td>
<td><strong>Accel Name:</strong> NVIDIA Tesla K40m</td>
</tr>
<tr>
<td><strong>CPU MHz Maximum:</strong> 3500</td>
<td><strong>Type of Accel:</strong> GPU</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong> 24 cores, 2 chips, 12 cores/chip, 2 threads/core</td>
<td><strong>Accel Connection:</strong> PCIe 3.0 16x</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong> 1-2 chips</td>
<td><strong>Does Accel Use ECC:</strong> Yes</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong> 32 KB I + 32 KB D on chip per core</td>
<td><strong>Accel Driver:</strong> NVIDIA UNIX x86_64 Kernel Module 331.20</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong> 256 KB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td><strong>L3 Cache:</strong> 30 MB I+D on chip per chip, 30 MB shared / 12 cores</td>
<td></td>
</tr>
<tr>
<td><strong>Other Cache:</strong> None</td>
<td></td>
</tr>
<tr>
<td><strong>Memory:</strong> 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC)</td>
<td></td>
</tr>
<tr>
<td><strong>Disk Subsystem:</strong> 15 TB 3x 6+2 RAID6, 24 x 900 GB SAS (Western Digital WD9001BKHG02D22, 10K RPM)</td>
<td></td>
</tr>
<tr>
<td><strong>Other Hardware:</strong> None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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</tbody>
</table>

### Operating System

- Red Hat Enterprise Linux Server release 6.4 (Santiago)
- Kernel 2.6.32-358.el6.x86_64

### Compiler

- Intel c/c++/Fortran Compiler XE, Version 14.0.1.106

### File System

- NFSv3 IPoIB

### System State

- Run level 5 (Multi-users)

### Other Software

- CUDA 5.5
SGI NVIDIA Tesla K40m

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>101.tpacf</td>
<td>70.5</td>
<td>1.52</td>
<td>70.1</td>
<td>1.53</td>
</tr>
<tr>
<td>103.stencil</td>
<td>57.5</td>
<td>2.17</td>
<td>57.5</td>
<td>2.17</td>
</tr>
<tr>
<td>104.lbm</td>
<td>40.8</td>
<td>2.75</td>
<td>40.8</td>
<td>2.74</td>
</tr>
<tr>
<td>110.fft</td>
<td>54.3</td>
<td>2.04</td>
<td>54.3</td>
<td>2.04</td>
</tr>
<tr>
<td>112.spmv</td>
<td>71.9</td>
<td>2.04</td>
<td>71.9</td>
<td>2.04</td>
</tr>
<tr>
<td>114.mriq</td>
<td><strong>30.4</strong></td>
<td><strong>3.58</strong></td>
<td>30.4</td>
<td>3.58</td>
</tr>
<tr>
<td>116.histo</td>
<td>83.9</td>
<td>1.36</td>
<td>83.9</td>
<td>1.36</td>
</tr>
<tr>
<td>117.bfs</td>
<td>66.2</td>
<td>1.77</td>
<td><strong>66.2</strong></td>
<td><strong>1.77</strong></td>
</tr>
<tr>
<td>118.cutcp</td>
<td><strong>34.4</strong></td>
<td><strong>2.88</strong></td>
<td>34.4</td>
<td>2.88</td>
</tr>
<tr>
<td>120.kmeans</td>
<td>89.8</td>
<td>1.11</td>
<td><strong>89.9</strong></td>
<td><strong>1.11</strong></td>
</tr>
<tr>
<td>121.lavmd</td>
<td>65.2</td>
<td>1.67</td>
<td><strong>65.7</strong></td>
<td><strong>1.66</strong></td>
</tr>
<tr>
<td>122.cfd</td>
<td>56.2</td>
<td>2.24</td>
<td>56.1</td>
<td>2.25</td>
</tr>
<tr>
<td>123.nw</td>
<td>70.2</td>
<td>1.64</td>
<td><strong>70.2</strong></td>
<td><strong>1.64</strong></td>
</tr>
<tr>
<td>124.hotspot</td>
<td>39.9</td>
<td>2.85</td>
<td><strong>39.9</strong></td>
<td><strong>2.86</strong></td>
</tr>
<tr>
<td>125.lud</td>
<td>82.8</td>
<td>1.44</td>
<td>83.4</td>
<td>1.43</td>
</tr>
<tr>
<td>126.ge</td>
<td>43.4</td>
<td>3.57</td>
<td>43.4</td>
<td>3.57</td>
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<tr>
<td>127.srad</td>
<td>59.8</td>
<td>1.91</td>
<td><strong>59.8</strong></td>
<td><strong>1.91</strong></td>
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<tr>
<td>128.heartwall</td>
<td>100</td>
<td>1.06</td>
<td>101</td>
<td>1.05</td>
</tr>
<tr>
<td>140.bplustree</td>
<td>86.9</td>
<td>1.24</td>
<td><strong>86.9</strong></td>
<td><strong>1.24</strong></td>
</tr>
</tbody>
</table>

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

Operating System Notes

Transparent Hugepage: disabled
Transparent Hugepage is disabled by
echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled

Platform Notes

Sysinfo program /store/hfeng/Accel/kit-39/Docs/sysinfo
$Rev: 6874 $ $Date:: 2013-11-20 #$ 0953404ef7e75a5f9bb534c6de3f831
running on n009 Thu Feb 27 20:17:18 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

Continued on next page
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Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2697 v2 @ 2.70GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 6 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 6 9 10 11 12 13
cache size : 30720 KB

From /proc/meminfo
MemTotal:       132131352 kB
hugePages_Total:       0
hugepagesize:       2048 kB

/usr/bin/lsb_release -d
 Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
sgi-accelerate-release: SGI Accelerate 1.6, Build 708r13.rhel6-1304102350
gsi-foundation-release: SGI Foundation Software 2.8, Build 708r13.rhel6-1304102350
gsi-mpi-release: SGI MPI 1.6, Build 708r13.rhel6-1304102350
gsi-release: SGI Performance Suite 1.6, Build 708r13.rhel6-1304102350
gsi-upc-release: SGI UPC 1.6, Build 708r13.rhel6-1304102350
gsi-XFS_XVM-release: SGI XFS-XVM 3.0, Build 707rp29.rhel6-1306102001
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
 Linux n009 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64
x86_64 x86_64 GNU/Linux

run-level 5 Feb 18 14:36

SPEC is set to: /store/hfeng/Accel/kit-39
filesystem type size used avail use% mounted on
servicel-ib:/nas
nfs 15T 1.3T 14T 9% /nas

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:** NVIDIA CUDA, OpenCL 1.1 CUDA 6.0.1
- **OpenCL Device #0:** Tesla K40m, v 331.20

C++ benchmarks:
- **OpenCL Platform:** NVIDIA CUDA, OpenCL 1.1 CUDA 6.0.1
- **OpenCL Device #0:** Tesla K40m, v 331.20

---

**Base Compiler Invocation**

C benchmarks:
- **icc**

C++ benchmarks:
- **icpc**

---

**Base Optimization Flags**

C benchmarks:
- **-O3**

C++ benchmarks:
- **-O3**

---

**Base Other Flags**

C benchmarks:
- **-I/usr/local/cuda/include -L/usr/local/cuda/lib64 -lOpenCL**

C++ benchmarks:
- **-I/usr/local/cuda/include -L/usr/local/cuda/lib64 -lOpenCL**

---

The flags file that was used to format this result can be browsed at [http://www.spec.org/accel/flags/SGI-Accel-OpenCL.html](http://www.spec.org/accel/flags/SGI-Accel-OpenCL.html)

You can also download the XML flags source by saving the following link: [http://www.spec.org/accel/flags/SGI-Accel-OpenCL.xml](http://www.spec.org/accel/flags/SGI-Accel-OpenCL.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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