# SPEC ACCEL™ ACC Result

## Cray
(Test Sponsor: Indiana University)

**NVIDIA Tesla K20**

**Cray XK7**

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**SPECaccel_acc_peak = Not Run**

**SPECaccel_acc_base = 2.02**

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### Hardware

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>AMD Opteron 6276</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>AMD Turbo CORE Technology up to 3.2GHz, Turbo CORE off</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2300</td>
</tr>
<tr>
<td>CPU MHz Maximum:</td>
<td>3200</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>16 cores, 1 chip, 16 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 16 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>16 MB I+D on chip per chip, 2 MB shared / 2 cores</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>16 MB I+D on chip per chip, 8 MB shared / 8 cores</td>
</tr>
</tbody>
</table>

### Accelerator

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accel Model Name:</td>
<td>Tesla K20</td>
</tr>
<tr>
<td>Accel Vendor:</td>
<td>NVIDIA</td>
</tr>
<tr>
<td>Accel Name:</td>
<td>NVIDIA Tesla K20</td>
</tr>
<tr>
<td>Type of Accel:</td>
<td>GPU</td>
</tr>
<tr>
<td>Accel Connection:</td>
<td>PCIe 2.0 16x</td>
</tr>
<tr>
<td>Does Accel Use ECC:</td>
<td>yes</td>
</tr>
<tr>
<td>Accel Description:</td>
<td>NVIDIA Tesla K20m GPU, 2496 CUDA cores, 706 MHz, 5 GB GDDR5 RAM</td>
</tr>
<tr>
<td>Accel Driver:</td>
<td>NVIDIA UNIX x86_64 Kernel Module 352.68</td>
</tr>
</tbody>
</table>

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Continued on next page
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ACCEL license: 3440A
Test sponsor: Indiana University
Tested by: Indiana University

Test date: Mar-2017
Hardware Availability: Apr-2013
Software Availability: Jan-2017

Hardware (Continued)

Other Cache: None
Memory: 32 GB (4 x 8 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem: None
Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64), Cray
Linux Environment 5.2
3.0.101-0.46.1_1.0502.8871-cray_gem_c
Compiler: PGI Accelerator Fortran/C/C++ Server, Release 17.1
File System: NFSv3 (DDN SFA12KE) over 10GB Ethernet
System State: Run level 3 (Multi-user)
Other Software: NVIDIA CUDA 7.5.18

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
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<td>303.ostencil</td>
<td>73.7</td>
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<td>351.palm</td>
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</tbody>
</table>

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

Platform Notes

Sysinfo program
/N/dc2/projects/hpc/lijunj/SPEC/accel-1.1-run/bigred2/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on nid00406 Thu Mar 2 16:30:25 2017

Continued on next page
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Platform Notes (Continued)

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.)
cpu cores : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7
cache size : 2048 KB

From /proc/meminfo
MemTotal: 33083764 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 = 3

uname -a:
  Linux nid00406 3.0.101-0.46.1.1.0502.8871-cray_gem_c #1 SMP Sat Oct 22
  15:26:43 UTC 2016 x86_64 x86_64 x86_64 GNU/Linux

SPEC is set to: /N/dc2/projects/hpc/lijunj/SPEC/accel-1.1-run/bigred2
Filesystem Type Size Used Avail Use% Mounted on
10.10.0.1710o2ib:/dc2 lustre 5.3P 5.1P 194T 97% /N/dc2

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

(End of data from sysinfo program)

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Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Optimization Flags

C benchmarks:
-fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda7.5

Fortran benchmarks:
-fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda7.5

Benchmarks using both Fortran and C:
-Mnomain

The flags file that was used to format this result can be browsed at
http://www.spec.org/accel/flags/pgi2017_flags.html
You can also download the XML flags source by saving the following link:
http://www.spec.org/accel/flags/pgi2017_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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