**Cray**  
(Test Sponsor: Indiana University)

NVIDIA Tesla K20

Cray XK7

<table>
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<td>SPECaccel_acc_base = 1.71</td>
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ACCEL license: 3440A  
Test sponsor: Indiana University  
Tested by: Indiana University

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<td>1.89</td>
<td></td>
</tr>
<tr>
<td>370.bt</td>
<td>2.26</td>
<td></td>
</tr>
</tbody>
</table>

### 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

### 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, 706 MHz, 5 GB GDDR5 RAM
- **Accel Driver:** NVIDIA UNIX x86_64 Kernel Module 352.68

Continued on next page.
## SPEC ACCEL ACC Result

**Cray**  
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Cray XK7

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- **ACCEL license:** 3440A  
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<tbody>
<tr>
<td>Other Cache:</td>
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</tr>
<tr>
<td>Memory:</td>
<td>32 GB (4 x 8 GB 2Rx4 PC3L-12800R-11, ECC)</td>
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<tr>
<td>Disk Subsystem:</td>
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<tr>
<td>Other Hardware:</td>
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### Software
- **Operating System:** SUSE Linux Enterprise Server 11 (x86_64), Cray 3.0.101-0.46.1_1.0502.8871-cr5_gem_c  
- **Compiler:** PGI Accelerator Fortran/C/C++ Server, Release 14.1  
- **File System:** lustre  
- **System State:** Run level 3 (multi-user)  
- **Other Software:** NVIDIA CUDA 5.5.51

### Results Table

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<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
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<td>98.7</td>
<td>2.26</td>
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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-1.2-run/br2/cuda55/Docs/sysinfo  
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35  
running on nid00696 Thu May 3 08:43:33 2018

Continued on next page
**SPEC ACCEL ACC Result**

**Cray**
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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

From `/proc/meminfo`

MemTotal: 33083668 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 nid00696 3.0.101-0.46.1_1.0502.8871-cray_gem_c #1 SMP Mon Feb 12 13:56:55 UTC 2018 x86_64 x86_64 x86_64 GNU/Linux

SPEC is set to: /N/dc2/projects/hpc/lijunj/SPEC/accel-1.2-run/br2/cuda55

Filesystem Type Size Used Avail Use% Mounted on
10.10.0.171@o2ib:10.10.0.172@o2ib:/dc2 lustre 5.3P 4.4P 798T 85% /N/dc2

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

(End of data from sysinfo program)

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Test date: May-2018
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General Notes

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC HPG Policy document, http://www.spec.org/hpg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

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:cuda5.5

Fortran benchmarks:
-fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda5.5

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

353.clvrleaf: -fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda5.5

359.miniGhost: -fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda5.5 -Mnomain

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

You can also download the XML flags source by saving the following link:
https://www.spec.org/accel/flags/pgi_flags.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.