



# SPEC ACCEL™ ACC Result

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Cray

(Test Sponsor: Indiana University)

## NVIDIA Tesla K20

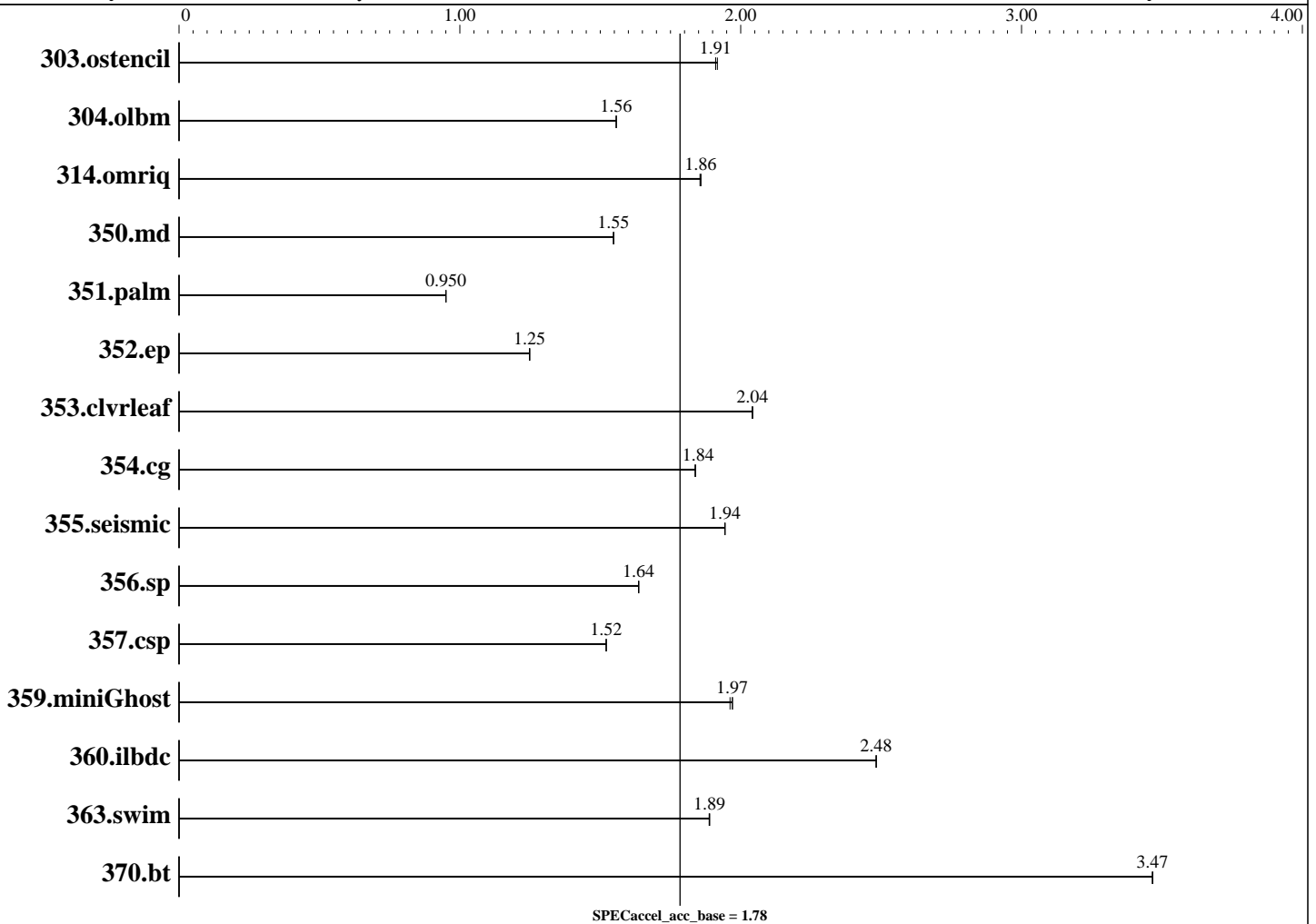
## Cray XK7

SPECaccel\_acc\_peak = Not Run

SPECaccel\_acc\_base = 1.78

ACCEL license: 3440A  
Test sponsor: Indiana University  
Tested by: Indiana University

Test date: May-2018  
Hardware Availability: Apr-2013  
Software Availability: Feb-2018



### 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

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### 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



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### 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 3.0.101-0.46.1\_1.0502.8871-cray\_gem\_c  
Compiler: PGI Accelerator Fortran/C/C++ Server, Release 15.3  
File System: lustre  
NFSv3 (DDN SFA12KE) over 10GB Ethernet  
System State: Run level 3 (multi-user)  
Other Software: NVIDIA CUDA 6.5.14

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	75.6	1.92	<b><u>75.9</u></b>	<b><u>1.91</u></b>	75.9	1.91						
304.olbm	292	1.56	<b><u>292</u></b>	<b><u>1.56</u></b>	292	1.56						
314.omriq	514	1.86	<b><u>515</u></b>	<b><u>1.86</u></b>	515	1.86						
350.md	163	1.55	163	1.55	<b><u>163</u></b>	<b><u>1.55</u></b>						
351.palm	389	0.951	<b><u>389</u></b>	<b><u>0.950</u></b>	389	0.950						
352.ep	<b><u>425</u></b>	<b><u>1.25</u></b>	424	1.25	425	1.25						
353.cvrleaf	218	2.04	<b><u>218</u></b>	<b><u>2.04</u></b>	218	2.04						
354.cg	222	1.84	222	1.84	<b><u>222</u></b>	<b><u>1.84</u></b>						
355.seismic	190	1.94	190	1.94	<b><u>190</u></b>	<b><u>1.94</u></b>						
356.sp	169	1.64	169	1.64	<b><u>169</u></b>	<b><u>1.64</u></b>						
357.csp	177	1.52	178	1.52	<b><u>178</u></b>	<b><u>1.52</u></b>						
359.miniGhost	188	1.96	<b><u>187</u></b>	<b><u>1.97</u></b>	187	1.97						
360.ilbdc	<b><u>148</u></b>	<b><u>2.48</u></b>	148	2.48	148	2.48						
363.swim	122	1.89	122	1.89	<b><u>122</u></b>	<b><u>1.89</u></b>						
370.bt	64.3	3.47	<b><u>64.3</u></b>	<b><u>3.47</u></b>	64.3	3.47						

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/cuda65/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on nid00692 Wed May 2 10:43:38 2018
```

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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:      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 nid00692 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/cuda65
Filesystem      Type      Size  Used Avail Use% Mounted
on
10.10.0.171@o2ib:10.10.0.172@o2ib:/dc2 lustre  5.3P  4.4P  787T  86% /N/dc2
```

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

(End of data from sysinfo program)  
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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:cuda6.5

Fortran benchmarks:  
-fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda6.5

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

353.clvrlf: -fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda6.5

359.miniGhost: -fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda6.5  
-Mnomain

The flags file that was used to format this result can be browsed at

[https://www.spec.org/accel/flags/pgi\\_flags.html](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](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](mailto:webmaster@spec.org).

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