



# SPEC ACCEL™ ACC Result

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Cray

(Test Sponsor: Indiana University)

## NVIDIA Tesla K20

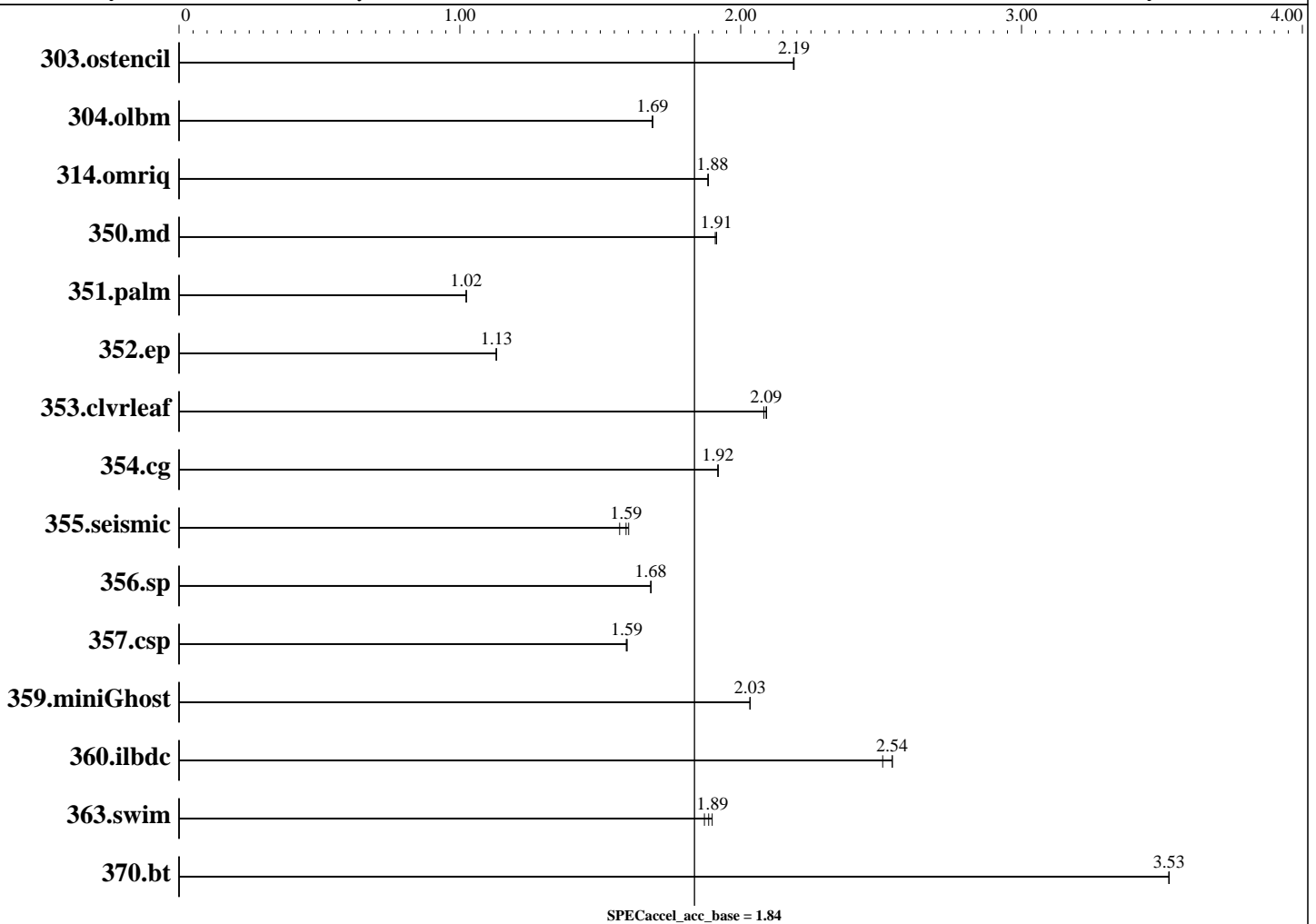
## Cray XK7

SPECaccel\_acc\_peak = Not Run

SPECaccel\_acc\_base = 1.84

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

Test date: Mar-2015  
Hardware Availability: Apr-2013  
Software Availability: Feb-2015



### 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, 706MHz, 5 GB GDDR5 RAM  
 Accel Driver: NVIDIA UNIX x86\_64 Kernel Module 319.82



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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 Linux Environment 4.2  
SUSE Linux Enterprise Server 11 (x86\_64) 2.6.32.59-0.7.1\_1.0402.7496-cray\_gem\_c  
Compiler: PGI Accelerator Fortran/C/C++ Server, Release 15.3  
File System: NFSv3 (IBM N5500 NAS) over Gb ethernet  
System State: Multi-user, run level 3  
Other Software: NVIDIA CUDA 5.5.20

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	66.2	2.19	66.3	2.19	<b><u>66.2</u></b>	<b><u>2.19</u></b>						
304.olbm	<b><u>270</u></b>	<b><u>1.69</u></b>	270	1.69	270	1.69						
314.omriq	<b><u>507</u></b>	<b><u>1.88</u></b>	508	1.88	507	1.88						
350.md	132	1.91	<b><u>132</u></b>	<b><u>1.91</u></b>	132	1.91						
351.palm	362	1.02	362	1.02	<b><u>362</u></b>	<b><u>1.02</u></b>						
352.ep	469	1.13	469	1.13	<b><u>469</u></b>	<b><u>1.13</u></b>						
353.clvleaf	214	2.08	<b><u>213</u></b>	<b><u>2.09</u></b>	213	2.09						
354.cg	213	1.92	213	1.92	<b><u>213</u></b>	<b><u>1.92</u></b>						
355.seismic	236	1.57	<b><u>232</u></b>	<b><u>1.59</u></b>	231	1.60						
356.sp	164	1.68	164	1.68	<b><u>164</u></b>	<b><u>1.68</u></b>						
357.csp	170	1.59	<b><u>169</u></b>	<b><u>1.59</u></b>	169	1.60						
359.miniGhost	181	2.03	181	2.03	<b><u>181</u></b>	<b><u>2.03</u></b>						
360.ilbdc	146	2.51	<b><u>145</u></b>	<b><u>2.54</u></b>	144	2.54						
363.swim	123	1.87	<b><u>122</u></b>	<b><u>1.89</u></b>	121	1.90						
370.bt	63.3	3.52	<b><u>63.3</u></b>	<b><u>3.53</u></b>	63.3	3.53						

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

## Platform Notes

Sysinfo program /N/soft/mason/specaccel-1.0/Docs/sysinfo  
\$Rev: 6874 \$ \$Date:: 2013-11-20 #\$ 0953404ef7e75a5f9bbb534c6de3f831  
running on nid00352 Fri Mar 27 18:02:53 2015

This section contains SUT (System Under Test) info as seen by  
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## Platform Notes (Continued)

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 : 16
  siblings  : 16
  physical 0: cores 0 1 2 3 4 5 6 7
cache size : 2048 KB
```

```
From /proc/meminfo
MemTotal:      33084584 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 = 1
mazama-release:
Mazama Wed Aug 28 02:06:30 CDT 2013 on hssbld0 by bwdev
lsb-cray-mazama-7.1.0
```

```
uname -a:
Linux nid00352 2.6.32.59-0.7.1_1.0402.7496-cray_gem_c #1 SMP Thu Jul 10
19:17:02 UTC 2014 x86_64 x86_64 x86_64 GNU/Linux
```

```
SPEC is set to: /N/soft/mason/specaccel-1.0
Filesystem      Type  Size  Used Avail Use% Mounted on
/N/soft          dvs   599T  104T  495T  18% /N/soft
```

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:cuda5.5

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

353.cvrfleaf: -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

[http://www.spec.org/accel/flags/pgi2014\\_flags.html](http://www.spec.org/accel/flags/pgi2014_flags.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/accel/flags/pgi2014\\_flags.xml](http://www.spec.org/accel/flags/pgi2014_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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