SPEC ACCEL™ ACC Result

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Cray
(Test Sponsor: Indiana University)

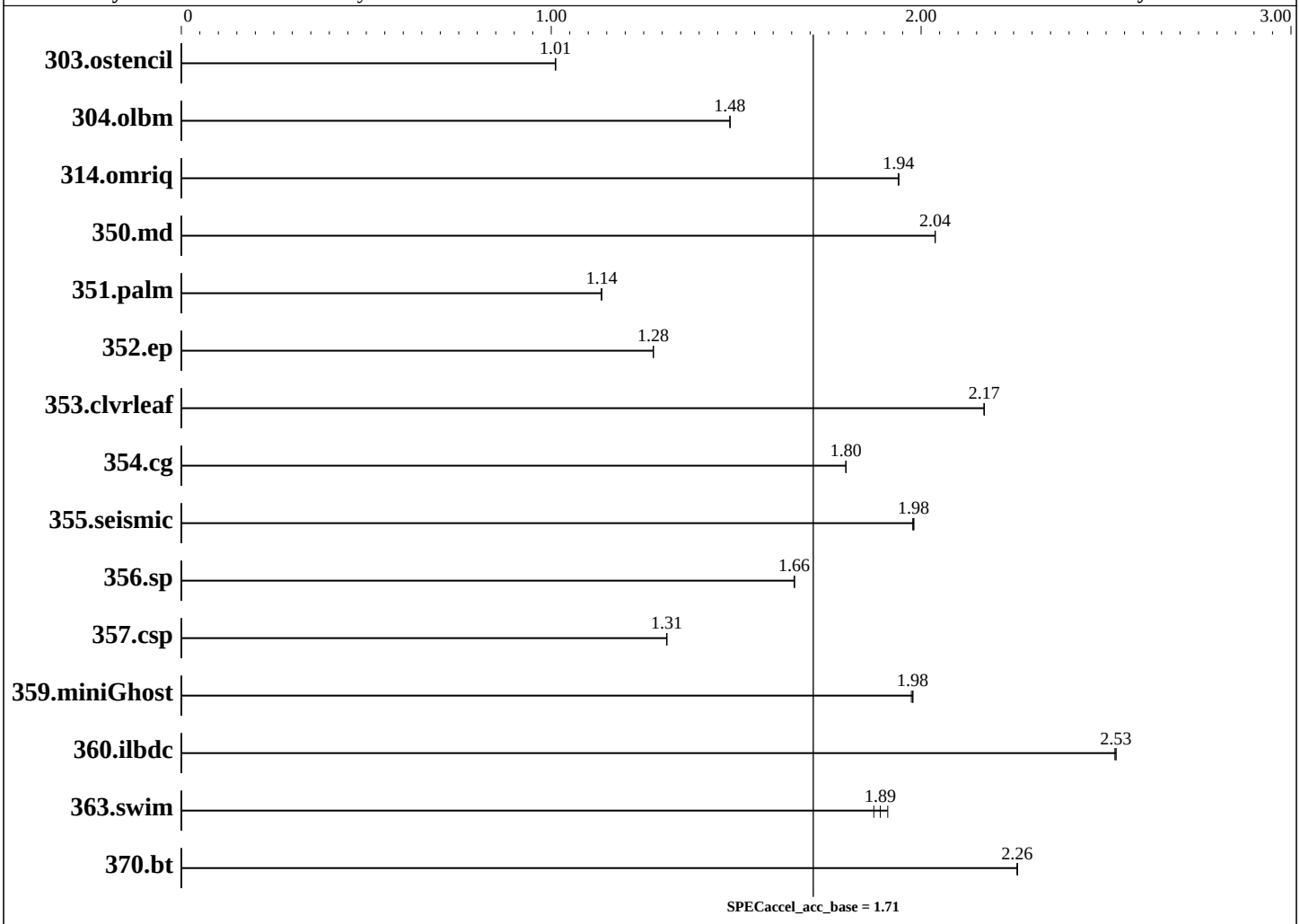
NVIDIA Tesla K20
Cray XK7

SPECaccel_acc_peak = Not Run

SPECaccel_acc_base = 1.71

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 14.1
File System: lustre
NFSv3 (DDN SFA12KE) over 10GB Ethernet
System State: Run level 3 (multi-user)
Other Software: NVIDIA CUDA 5.5.51

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	143	1.01	143	1.01	**143**	**1.01**						
304.olbm	307	1.48	**307**	**1.48**	307	1.48						
314.omriq	493	1.94	493	1.94	**493**	**1.94**						
350.md	124	2.04	**124**	**2.04**	124	2.04						
351.palm	326	1.14	326	1.14	**326**	**1.14**						
352.ep	415	1.28	415	1.28	**415**	**1.28**						
353.clvrleaf	205	2.17	205	2.17	**205**	**2.17**						
354.cg	227	1.80	**227**	**1.80**	227	1.80						
355.seismic	187	1.98	**187**	**1.98**	187	1.98						
356.sp	167	1.66	**167**	**1.66**	167	1.66						
357.csp	206	1.31	**206**	**1.31**	206	1.31						
359.miniGhost	187	1.97	187	1.98	**187**	**1.98**						
360.ilbdc	145	2.52	145	2.53	**145**	**2.53**						
363.swim	**122**	**1.89**	123	1.87	120	1.91						
370.bt	98.7	2.26	98.6	2.26	**98.7**	**2.26**						

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
```

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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 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)
(End of data from sysinfo program)
```

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.

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