SPEC ACCEL™ ACC Result

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Cray
(Test Sponsor: Indiana University)

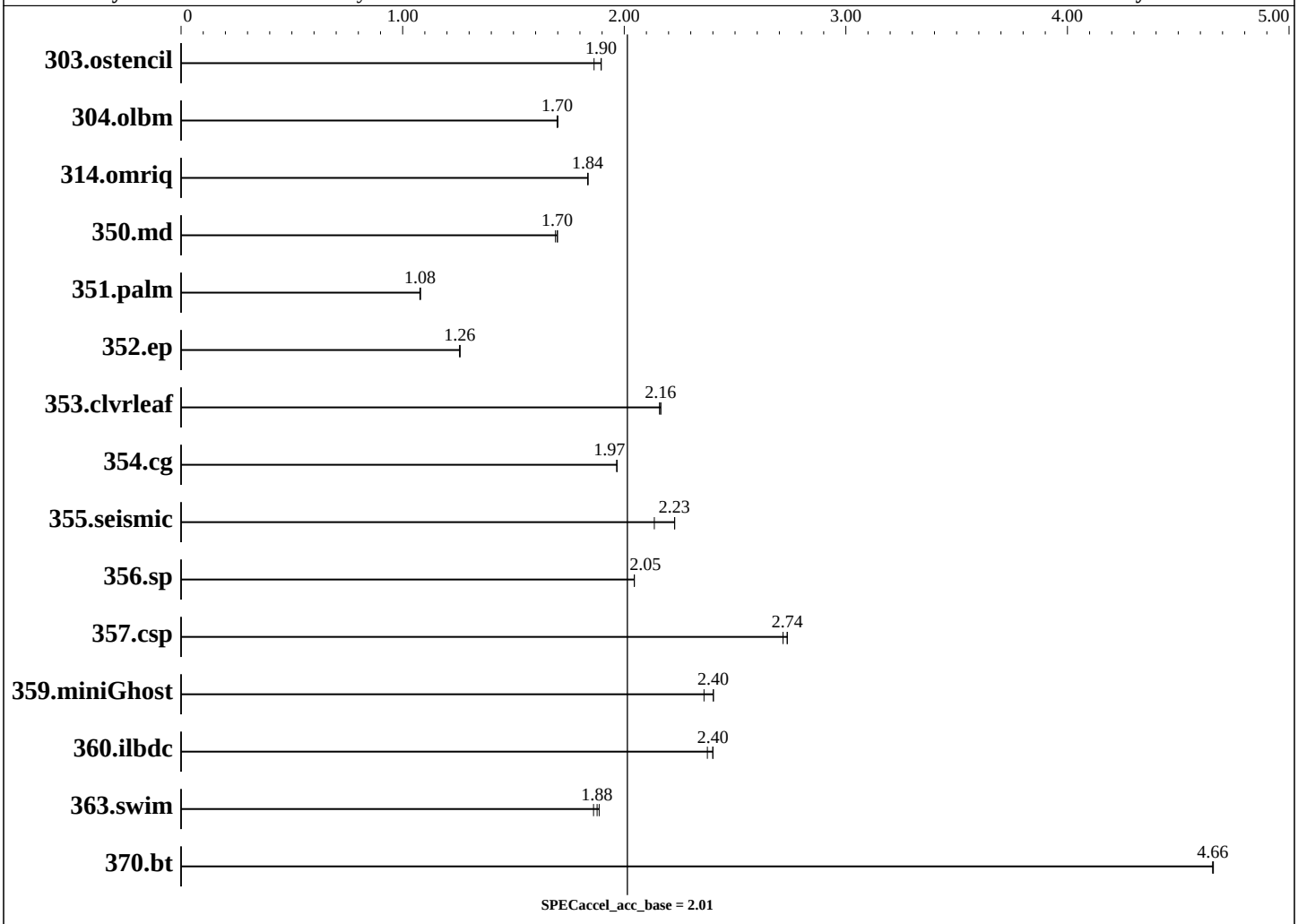
NVIDIA Tesla K20
Cray XK7

SPECaccel_acc_peak = Not Run

SPECaccel_acc_base = 2.01

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

Continued on next page

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 Professional Edition, Release 17.1
File System: lustre
NFSv3 (DDN SFA12KE) over 10GB Ethernet
System State: Run level 3 (multi-user)
Other Software: NVIDIA CUDA 7.5.18

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	76.5	1.90	77.8	1.86	**76.5**	**1.90**						
304.olbm	**268**	**1.70**	268	1.70	268	1.70						
314.omriq	521	1.84	**521**	**1.84**	521	1.84						
350.md	149	1.69	148	1.70	**148**	**1.70**						
351.palm	342	1.08	**343**	**1.08**	343	1.08						
352.ep	**421**	**1.26**	422	1.26	421	1.26						
353.clvrleaf	**206**	**2.16**	206	2.16	206	2.16						
354.cg	207	1.97	208	1.97	**207**	**1.97**						
355.seismic	173	2.14	**166**	**2.23**	166	2.23						
356.sp	135	2.05	135	2.05	**135**	**2.05**						
357.csp	99.4	2.72	98.7	2.74	**98.7**	**2.74**						
359.miniGhost	156	2.36	154	2.40	**154**	**2.40**						
360.ilbdc	155	2.38	153	2.40	**153**	**2.40**						
363.swim	124	1.86	**123**	**1.88**	122	1.89						
370.bt	47.9	4.66	47.9	4.66	**47.9**	**4.66**						

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/cuda75/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on nid00206 Fri May  4 12:27:47 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 nid00206 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/cuda75
   Filesystem                              Type    Size  Used Avail Use% Mounted
   on
   10.10.0.171@o2ib:10.10.0.172@o2ib:/dc2 lustre  5.3P  4.4P  776T  86% /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:cuda7.5
```

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

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

353.clvrleaf: `-fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda7.5`

359.miniGhost: `-fast -Mfprelaxed -acc -ta=tesla:cc35 -ta=tesla:cuda7.5 -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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