SPEC ACCEL™ ACC Result

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Supermicro

(Test Sponsor: NVIDIA Corporation)

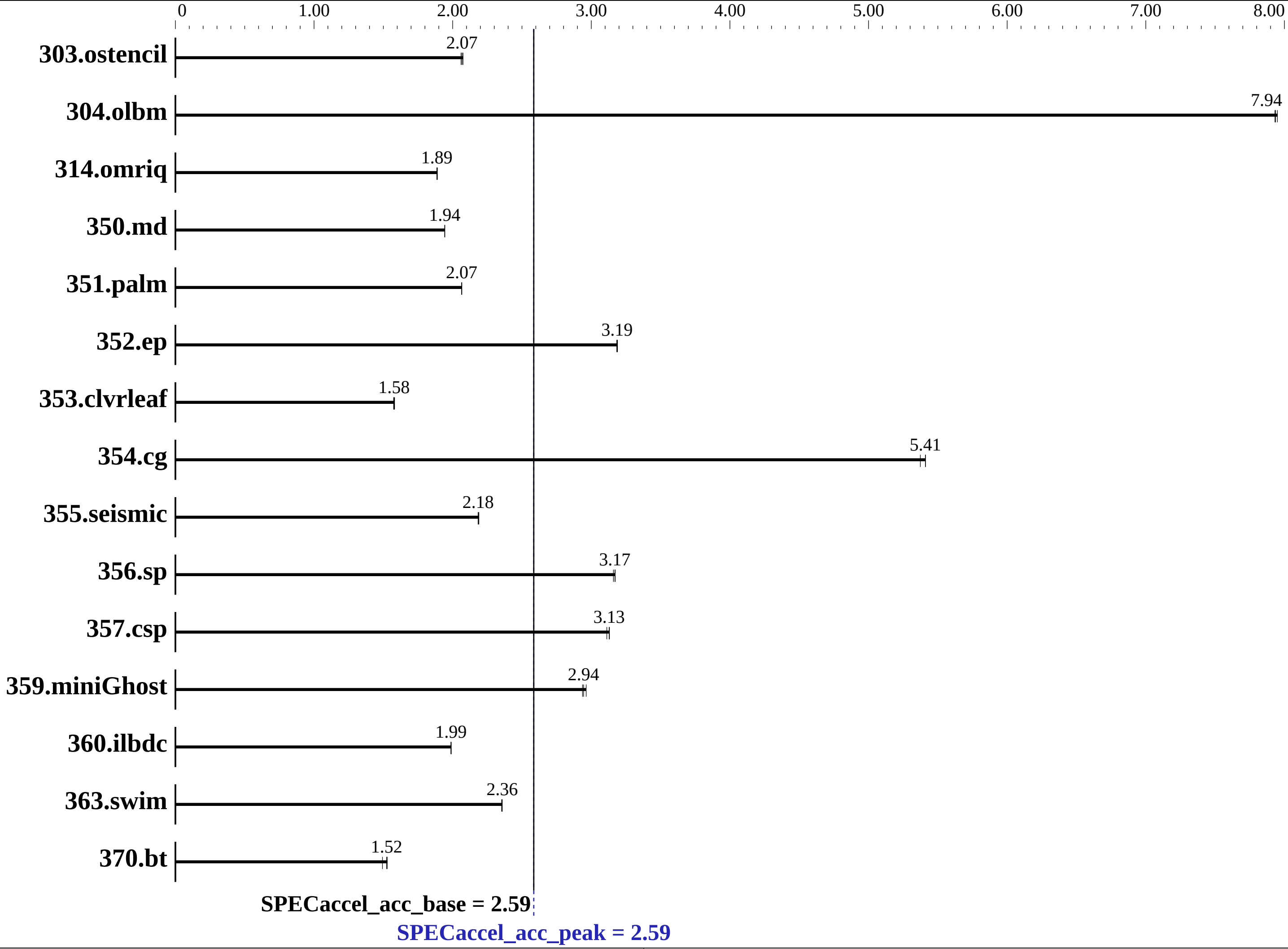
EPYC 7451

A+ Server 1023US-TR4

SPECaccel_acc_peak = 2.59

SPECaccel_acc_base = 2.59

ACCEL license:	019	**Test date:**	Aug-2018
Test sponsor:	NVIDIA Corporation	**Hardware Availability:**	Jul-2017
Tested by:	NVIDIA Corporation	**Software Availability:**	Aug-2018



Hardware

CPU Name:	AMD EPYC 7451
CPU Characteristics:	
CPU MHz:	2300
CPU MHz Maximum:	3200
FPU:	Integrated
CPU(s) enabled:	48 cores, 2 chips, 24 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chips
Primary Cache:	64 KB I + 32 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	64 MB I+D on chip per chip, 8 MB shared / 3 cores
Other Cache:	None

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Accelerator

Accel Model Name:	EPYC 7451
Accel Vendor:	AMD
Accel Name:	EPYC 7451
Type of Accel:	CPU
Accel Connection:	Not Applicable
Does Accel Use ECC:	Yes
Accel Description:	AMD EPYC 48-core CPU
Accel Driver:	Not Applicable

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Hardware (Continued)

Memory: 256 GB (16 x 16GB 4DRx4 PC4-2666V-L, running at 2667)
Disk Subsystem: 1 x 480 GB Intel SATA SSD (SSDSC2BB48)
Other Hardware: None

Software

Operating System: CentOS Linux release 7.4.1708 (Core) 4.15.0-1.el7.elrepo.x86_64
Compiler: PGI Professional Edition, Release 18.7 LLVM
File System: xfs
System State: Run level 3 (multi-user)
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	70.4	2.06	**70.1**	**2.07**	69.9	2.07	70.4	2.06	**70.1**	**2.07**	69.9	2.07
304.olbm	57.4	7.93	57.2	7.95	**57.3**	**7.94**	57.4	7.93	57.2	7.95	**57.3**	**7.94**
314.omriq	507	1.89	**507**	**1.89**	506	1.89	507	1.89	**507**	**1.89**	506	1.89
350.md	130	1.94	**130**	**1.94**	130	1.94	130	1.94	**130**	**1.94**	130	1.94
351.palm	179	2.06	**179**	**2.07**	179	2.07	179	2.06	**179**	**2.07**	179	2.07
352.ep	166	3.18	**166**	**3.19**	166	3.19	166	3.18	**166**	**3.19**	166	3.19
353.clvrleaf	283	1.57	**282**	**1.58**	281	1.58	283	1.57	**282**	**1.58**	281	1.58
354.cg	75.9	5.37	75.4	5.41	**75.4**	**5.41**	75.9	5.37	75.4	5.41	**75.4**	**5.41**
355.seismic	**169**	**2.18**	169	2.18	169	2.19	**169**	**2.18**	169	2.18	169	2.19
356.sp	87.3	3.16	87.0	3.17	**87.1**	**3.17**	87.3	3.16	87.0	3.17	**87.1**	**3.17**
357.csp	86.8	3.11	86.2	3.13	**86.3**	**3.13**	86.8	3.11	86.2	3.13	**86.3**	**3.13**
359.miniGhost	126	2.94	125	2.96	**125**	**2.94**	126	2.94	125	2.96	**125**	**2.94**
360.ilbdc	185	1.99	184	1.99	**185**	**1.99**	185	1.99	184	1.99	**185**	**1.99**
363.swim	97.7	2.35	**97.6**	**2.36**	97.6	2.36	97.7	2.35	**97.6**	**2.36**	97.6	2.36
370.bt	149	1.49	**146**	**1.52**	146	1.53	149	1.49	**146**	**1.52**	146	1.53

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

Submit Notes

```
The config file option 'submit' was used.
Submit command: numactl --interleave all $command
```

Platform Notes

```
Sysinfo program /local/home/colgrove/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on epyc.pgi.net Mon Aug 13 13:19:35 2018

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 EPYC 7451 24-Core Processor
      2 "physical id"s (chips)
      96 "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 : 24
      siblings  : 48
      physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26
      28 29 30
      physical 1: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26
      28 29 30
   cache size : 512 KB

From /proc/meminfo
   MemTotal:       264029300 kB
   HugePages_Total:      20
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   CentOS Linux release 7.4.1708 (Core)

From /etc/*release* /etc/*version*
   centos-release: CentOS Linux release 7.4.1708 (Core)
   centos-release-upstream: Derived from Red Hat Enterprise Linux 7.4 (Source)
   hpe-mpi-release: HPE MPI 1.1, Build 717r22.rhel74-1711292100
   os-release:
      NAME="CentOS Linux"
      VERSION="7 (Core)"
      ID="centos"
      ID_LIKE="rhel fedora"
      VERSION_ID="7"
      PRETTY_NAME="CentOS Linux 7 (Core)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:centos:centos:7"
   redhat-release: CentOS Linux release 7.4.1708 (Core)
   sgi-release: SGI Performance Suite 1.15
   system-release: CentOS Linux release 7.4.1708 (Core)
   system-release-cpe: cpe:/o:centos:centos:7
```

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Platform Notes (Continued)

```
uname -a:
   Linux epyc.pgi.net 4.15.0-1.el7.elrepo.x86_64 #1 SMP Sun Jan 28 20:45:20 EST
   2018 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 1 13:00

SPEC is set to: /local/home/colgrove/SPECACCEL
   Filesystem              Type  Size  Used Avail Use% Mounted on
   /dev/mapper/centos-root xfs   443G  161G  282G  37% /
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
   reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to
   hardware, firmware, and the "DMTF SMBIOS" standard.


(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
ACC_NUM_CORES = "48"
HUGETLB_PATH = "/mnt/hugetlb"
KMP_ALL_THREADS = "48"
OMP_PLACES = "{0},{1},{2},{3},{4},{5},{6},{7},{8},{9},{10},{11},{12},{13},{14},{15},{16},{17},{18},{19},
    {20},{21},{22},{23},{24},{25},{26},{27},{28},{29},{30},{31},{32},{33},{34},{35},{36},{37},{38},{39},
    {40},{41},{42},{43},{44},{45},{46},{47}"
OMP_PROC_BIND = "true"
OMP_THREAD_LIMIT = "48"

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: 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.
Yes: 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.
```

Base Compiler Invocation

C benchmarks:
`pgcc`

Fortran benchmarks:
`pgfortran`

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Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
`pgcc pgfortran`

Base Optimization Flags

C benchmarks:
`-fast -Mnouniform -Mhugetlb -V18.7 -Mllvm -acc -ta=multicore`

Fortran benchmarks:
`-fast -Mnouniform -Mhugetlb -V18.7 -Mllvm -acc -ta=multicore`

Benchmarks using both Fortran and C:

353.clvrleaf: `-fast -Mnouniform -Mhugetlb -V18.7 -Mllvm -acc -ta=multicore`

359.miniGhost: `-fast -Mnouniform -Mhugetlb -V18.7 -Mllvm -acc -ta=multicore -Mnomain`

Peak Optimization Flags

C benchmarks:

303.ostencil: `basepeak = yes`

304.olbm: `basepeak = yes`

314.omriq: `basepeak = yes`

352.ep: `basepeak = yes`

354.cg: `basepeak = yes`

357.csp: `basepeak = yes`

370.bt: `basepeak = yes`

Fortran benchmarks:

350.md: `basepeak = yes`

351.palm: `basepeak = yes`

Continued on next page

Peak Optimization Flags (Continued)

355.seismic: `basepeak = yes`

356.sp: `basepeak = yes`

360.ilbdc: `basepeak = yes`

363.swim: `basepeak = yes`

Benchmarks using both Fortran and C:

353.clvrleaf: `basepeak = yes`

359.miniGhost: `basepeak = yes`

The flags files that were used to format this result can be browsed at
https://www.spec.org/accel/flags/PGI-Platform-Multicore-OMP.html
https://www.spec.org/accel/flags/pgi2018_flags.html

You can also download the XML flags sources by saving the following links:
https://www.spec.org/accel/flags/PGI-Platform-Multicore-OMP.xml
https://www.spec.org/accel/flags/pgi2018_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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