



SPEC ACCEL™ ACC Result

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Supermicro
(Test Sponsor: NVIDIA Corporation)

EPYC 7451

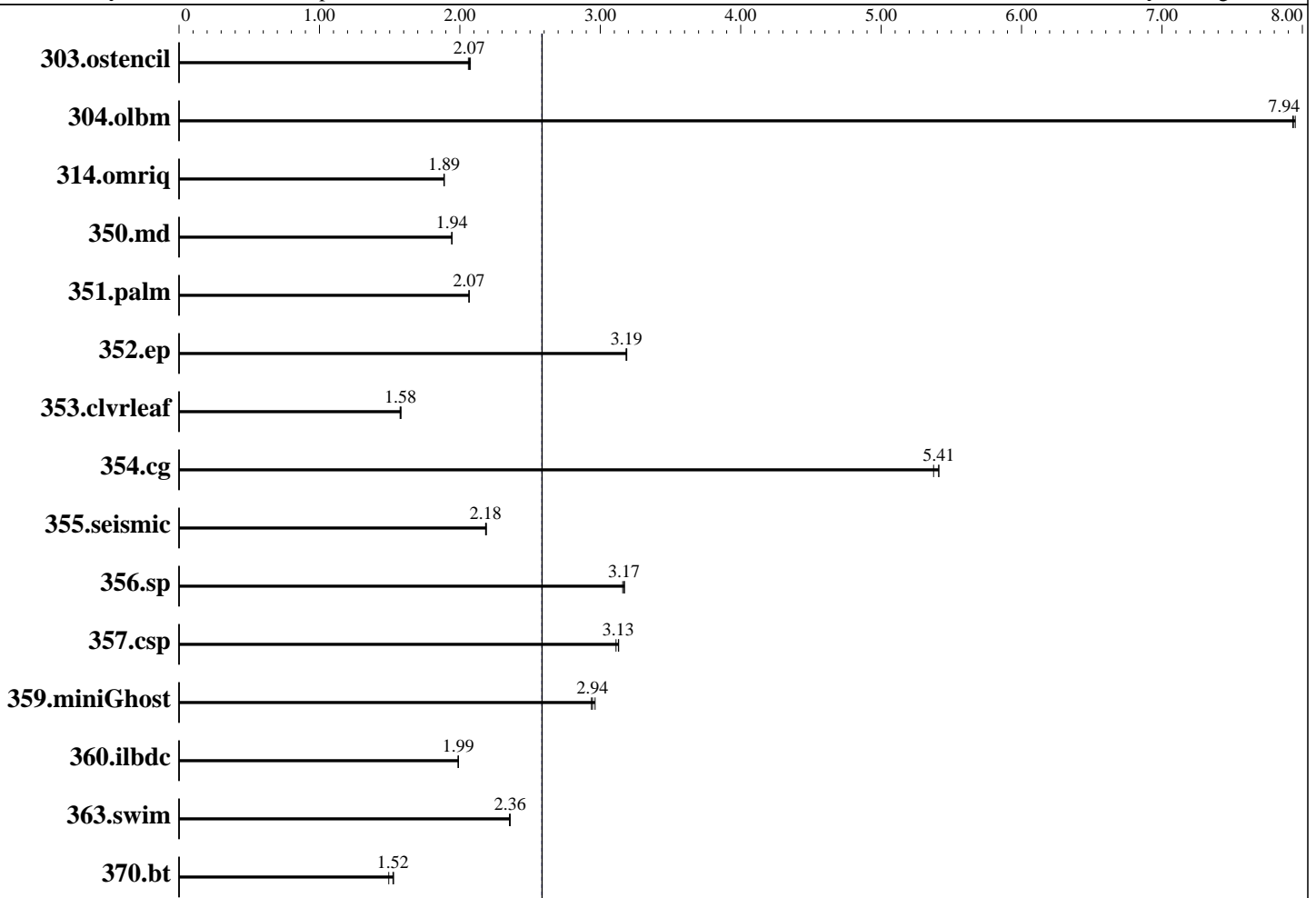
A+ Server 1023US-TR4

SPECaccel_acc_peak = 2.59

SPECaccel_acc_base = 2.59

ACCEL license: 019
Test sponsor: NVIDIA Corporation
Tested by: NVIDIA Corporation

Test date: Aug-2018
Hardware Availability: Jul-2017
Software Availability: Aug-2018



SPECaccel_acc_base = 2.59
SPECaccel_acc_peak = 2.59

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



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Platform Notes

Sysinfo program /local/home/colgrove/SPECACCEL/Docs/sysinfo
\$Rev: 6965 \$ \$Date:: 2015-04-21 # \$ c05a7f14b1b1765e3feldf68447e8a35
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.clvrfleaf: -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

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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.clvrlf: 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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