

# SPEC ACCEL™ ACC Result

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Dell

(Test Sponsor: NVIDIA Corporation)

Epyc 7451

PowerEdge R7425

SPECaccel\_acc\_peak = 2.83

SPECaccel\_acc\_base = 2.83

ACCEL license: 019

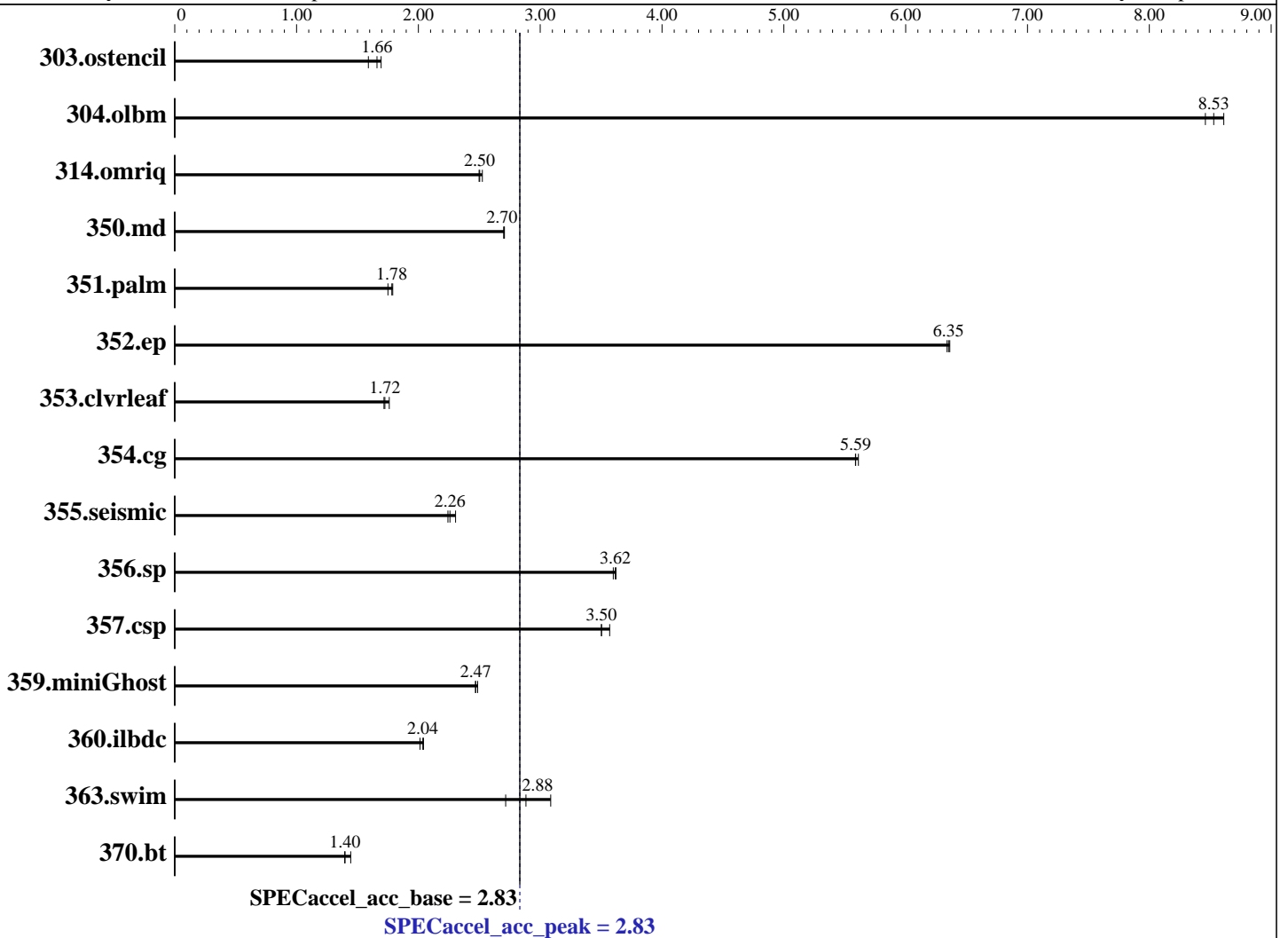
Test sponsor: NVIDIA Corporation

Tested by: NVIDIA Corporation

Test date: May-2019

Hardware Availability: Nov-2017

Software Availability: Apr-2019



## Hardware

CPU Name: AMD EPYC 7451 24-Core  
CPU Characteristics:  
CPU MHz: 2900  
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  
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: --  
Accel Driver: None

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## Hardware (Continued)

Memory: 256 GB (16 x 16GB PC4-21300 2666MHz DDR4)  
Disk Subsystem: Samsung 1 x 960 GB SATA SSD  
Other Hardware: None

## Software

Operating System: CentOS Linux release 7.5.1804 (Core)  
4.19.0-1.el7.elrepo.x86\_64  
Compiler: PGI Community Edition, Release 19.4  
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	91.2	1.59	85.6	1.69	<b><u>87.3</u></b>	<b><u>1.66</u></b>	91.2	1.59	85.6	1.69	<b><u>87.3</u></b>	<b><u>1.66</u></b>
304.olbm	52.8	8.61	<b><u>53.3</u></b>	<b><u>8.53</u></b>	53.8	8.46	52.8	8.61	<b><u>53.3</u></b>	<b><u>8.53</u></b>	53.8	8.46
314.omriq	379	2.53	<b><u>382</u></b>	<b><u>2.50</u></b>	383	2.50	379	2.53	<b><u>382</u></b>	<b><u>2.50</u></b>	383	2.50
350.md	93.3	2.70	93.1	2.71	<b><u>93.3</u></b>	<b><u>2.70</u></b>	93.3	2.70	93.1	2.71	<b><u>93.3</u></b>	<b><u>2.70</u></b>
351.palm	<b><u>208</u></b>	<b><u>1.78</u></b>	211	1.75	207	1.79	<b><u>208</u></b>	<b><u>1.78</u></b>	211	1.75	207	1.79
352.ep	83.6	6.34	<b><u>83.4</u></b>	<b><u>6.35</u></b>	83.3	6.36	83.6	6.34	<b><u>83.4</u></b>	<b><u>6.35</u></b>	83.3	6.36
353.clvleaf	259	1.72	253	1.76	<b><u>258</u></b>	<b><u>1.72</u></b>	259	1.72	253	1.76	<b><u>258</u></b>	<b><u>1.72</u></b>
354.cg	73.0	5.59	72.7	5.61	<b><u>73.0</u></b>	<b><u>5.59</u></b>	73.0	5.59	72.7	5.61	<b><u>73.0</u></b>	<b><u>5.59</u></b>
355.seismic	<b><u>164</u></b>	<b><u>2.26</u></b>	161	2.31	165	2.24	<b><u>164</u></b>	<b><u>2.26</u></b>	161	2.31	165	2.24
356.sp	76.2	3.62	<b><u>76.3</u></b>	<b><u>3.62</u></b>	76.7	3.60	76.2	3.62	<b><u>76.3</u></b>	<b><u>3.62</u></b>	76.7	3.60
357.csp	77.1	3.50	75.6	3.57	<b><u>77.1</u></b>	<b><u>3.50</u></b>	77.1	3.50	75.6	3.57	<b><u>77.1</u></b>	<b><u>3.50</u></b>
359.miniGhost	148	2.49	<b><u>149</u></b>	<b><u>2.47</u></b>	149	2.47	148	2.49	<b><u>149</u></b>	<b><u>2.47</u></b>	149	2.47
360.ilbdc	182	2.01	<b><u>180</u></b>	<b><u>2.04</u></b>	180	2.04	182	2.01	<b><u>180</u></b>	<b><u>2.04</u></b>	180	2.04
363.swim	84.7	2.72	<b><u>79.8</u></b>	<b><u>2.88</u></b>	74.5	3.09	84.7	2.72	<b><u>79.8</u></b>	<b><u>2.88</u></b>	74.5	3.09
370.bt	160	1.40	<b><u>160</u></b>	<b><u>1.40</u></b>	154	1.44	160	1.40	<b><u>160</u></b>	<b><u>1.40</u></b>	154	1.44

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.

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## Platform Notes

```
Sysinfo program /local/home/toepfer/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3feldf68447e8a35
running on perf-epyc4 Wed May 29 10:15:54 2019
```

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 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30
  physical 1: cores 0 1 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:      263857152 kB
HugePages_Total:       20
Hugepagesize:       2048 kB
```

/usr/bin/lsb\_release -d

```
CentOS Linux release 7.5.1804 (Core)
```

From /etc/\*release\* /etc/\*version\*

```
centos-release: CentOS Linux release 7.5.1804 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 7.5 (Source)
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 7.5.1804 (Core)
system-release: CentOS Linux release 7.5.1804 (Core)
system-release-cpe: cpe:/o:centos:centos:7
```

uname -a:

```
Linux perf-epyc4 4.19.0-1.el7.elrepo.x86_64 #1 SMP Mon Oct 22 10:40:32 EDT
2018 x86_64 x86_64 x86_64 GNU/Linux
```

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## Platform Notes (Continued)

run-level 3 Nov 20 11:12

SPEC is set to: /local/home/toepfer/SPECACCEL

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/centos_epyc4-root	xfs	890G	49G	841G	6%	/

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 = "96"

HUGETLB\_PATH = "/mnt/hugetlb"

OMP\_PROC\_BIND = "true"

## Base Compiler Invocation

C benchmarks:

pgcc

Fortran benchmarks:

pgfortran

Benchmarks using both Fortran and C:

pgcc pgfortran

## Base Optimization Flags

C benchmarks:

-fast -Mnouniform -Mhugetlb -acc -ta=multicore

Fortran benchmarks:

-fast -Mnouniform -Mhugetlb -acc -ta=multicore

Benchmarks using both Fortran and C:

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## Base Optimization Flags (Continued)

353.cvrleaf: -fast -Mnouniform -Mhugetlb -acc -ta=multicore

359.miniGhost: -fast -Mnouniform -Mhugetlb -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

355.seismic: basepeak = yes

356.sp: basepeak = yes

360.ilbdc: basepeak = yes

363.swim: basepeak = yes

Benchmarks using both Fortran and C:

353.cvrleaf: basepeak = yes

359.miniGhost: basepeak = yes

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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).

Tested with SPEC ACCEL v1.2.  
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