## SPEC ACCEL™ OMP Result

**Dell**  
(Test Sponsor: NVIDIA Corporation)  
**Epyc 7451**  
**PowerEdge R7425**  

| SPECaccel_omp_peak | SPECaccel_omp_base | 3.48 | 3.48 |

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**ACCEL license:** 019  
**Test sponsor:** NVIDIA Corporation  
**Tested by:** NVIDIA Corporation  
**Test date:** May-2019  
**Hardware Availability:** Nov-2017  
**Software Availability:** Apr-2018

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>AMD EPYC 7451 24-Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU MHZ:</td>
<td>2900</td>
</tr>
<tr>
<td>CPU MHZ Maximum:</td>
<td>3200</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>48 cores, 2 chips, 24 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>64 KB L1 + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>512 KB L1+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>64 MB L1+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Accelerator

<table>
<thead>
<tr>
<th>Accel Model Name:</th>
<th>Epyc 7451</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accel Vendor:</td>
<td>AMD</td>
</tr>
<tr>
<td>Accel Name:</td>
<td>Epyc 7451</td>
</tr>
<tr>
<td>Type of Accel:</td>
<td>CPU</td>
</tr>
<tr>
<td>Accel Connection:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Does Accel Use ECC:</td>
<td>Yes</td>
</tr>
<tr>
<td>Accel Description:</td>
<td>--</td>
</tr>
<tr>
<td>Accel Driver:</td>
<td>None</td>
</tr>
</tbody>
</table>

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**Continued on next page**
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SPECaccel_omp_peak = 3.48
SPECaccel_omp_base = 3.48

ACCEL license: 019
Test sponsor: NVIDIA Corporation
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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)
Compiler: PGI Community Edition, Release 19.4
File System: xfs
System State: Run level 3 (add definition here)
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>503.postencil</td>
<td>79.6</td>
<td>1.37</td>
<td><strong>81.9</strong></td>
<td><strong>1.33</strong></td>
<td>83.5</td>
<td>1.31</td>
<td>79.6</td>
<td>1.37</td>
<td><strong>81.9</strong></td>
<td><strong>1.33</strong></td>
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<td>1.31</td>
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<tr>
<td>504.polbm</td>
<td><strong>52.7</strong></td>
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<td>514.pomriq</td>
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<td><strong>382</strong></td>
<td><strong>1.63</strong></td>
<td>385</td>
<td>1.61</td>
<td>377</td>
<td>1.65</td>
<td><strong>382</strong></td>
<td><strong>1.63</strong></td>
<td>385</td>
<td>1.61</td>
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<tr>
<td>550.pmd</td>
<td>93.8</td>
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<td><strong>93.8</strong></td>
<td><strong>2.57</strong></td>
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<td>551.ppalm</td>
<td>252</td>
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<td><strong>251</strong></td>
<td><strong>2.16</strong></td>
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<td>2.16</td>
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<td>552.pep</td>
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<td><strong>2.56</strong></td>
<td>89.0</td>
<td>2.59</td>
<td>92.1</td>
<td>2.51</td>
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<td>89.0</td>
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<td>553.pclvleaf</td>
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<td><strong>4.50</strong></td>
<td>253</td>
<td>4.52</td>
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<td>4.42</td>
<td><strong>254</strong></td>
<td><strong>4.50</strong></td>
<td>253</td>
<td>4.52</td>
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<td>4.42</td>
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<td>554.pcg</td>
<td>69.5</td>
<td>4.79</td>
<td>70.8</td>
<td>4.70</td>
<td><strong>70.7</strong></td>
<td><strong>4.71</strong></td>
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<td><strong>145</strong></td>
<td><strong>1.95</strong></td>
<td>139</td>
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<td>147</td>
<td>1.92</td>
<td><strong>145</strong></td>
<td><strong>1.95</strong></td>
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<td>2.03</td>
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<td>80.9</td>
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<tr>
<td>557.pcs</td>
<td><strong>71.5</strong></td>
<td><strong>12.0</strong></td>
<td>71.5</td>
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<td>72.0</td>
<td>11.9</td>
<td><strong>71.5</strong></td>
<td><strong>12.0</strong></td>
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<td>12.0</td>
<td>72.0</td>
<td>11.9</td>
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<tr>
<td>559.pmniGhost</td>
<td>129</td>
<td>3.07</td>
<td>132</td>
<td>3.01</td>
<td><strong>130</strong></td>
<td><strong>3.06</strong></td>
<td>129</td>
<td>3.07</td>
<td>132</td>
<td>3.01</td>
<td><strong>130</strong></td>
<td><strong>3.06</strong></td>
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<td><strong>3.55</strong></td>
<td>181</td>
<td>3.61</td>
<td>187</td>
<td>3.49</td>
<td><strong>184</strong></td>
<td><strong>3.55</strong></td>
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<td>3.61</td>
<td>187</td>
<td>3.49</td>
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<td>563.pswim</td>
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<td>1.88</td>
<td><strong>84.4</strong></td>
<td><strong>1.88</strong></td>
<td>77.8</td>
<td>2.04</td>
<td>84.5</td>
<td>1.88</td>
<td><strong>84.4</strong></td>
<td><strong>1.88</strong></td>
<td>77.8</td>
<td>2.04</td>
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<td>570.pbt</td>
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<td><strong>45.1</strong></td>
<td><strong>17.3</strong></td>
<td>45.1</td>
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<td><strong>17.3</strong></td>
<td>45.1</td>
<td>17.3</td>
</tr>
</tbody>
</table>

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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SPECaccel_omp_peak = 3.48
SPECaccel_omp_base = 3.48

Platform Notes

Sysinfo program /local/home/toepfer/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b17578e1dfe68447e8a35
running on perf-epyc Wed May 29 13:16:31 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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Software Availability: Apr-2018

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:
OMP_NUM_THREADS = "96"
HUGETLB_PATH = "/mnt/hugetlb"
OMP_PROC_BIND = "true"

551.ppalm (base): "advec_ws_private" src.alt was used.

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Portability Flags

503.postencil: -DSPEC_USE_INNER_SIMD
504.polbm: -DSPEC_USE_INNER_SIMD
514.pomriq: -DSPEC_USE_INNER_SIMD
550.pmd: -DSPEC_USE_INNER_SIMD
551.ppalm: -DSPEC_USE_INNER_SIMD

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</table>

Test date: May-2019
Hardware Availability: Nov-2017
Software Availability: Apr-2018

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**Base Portability Flags (Continued)**

552.pep: -DSPEC_USE_INNER_SIMD
553.pclvrleaf: -DSPEC_USE_INNER_SIMD
554.pcg: -DSPEC_USE_INNER_SIMD
555.pseismic: -DSPEC_USE_INNER_SIMD
556.psp: -DSPEC_USE_INNER_SIMD
557.pcsp: -DSPEC_USE_INNER_SIMD
559.pmniGhost: -DSPEC_USE_INNER_SIMD
560.pilbdc: -DSPEC_USE_INNER_SIMD
563.pswim: -DSPEC_USE_INNER_SIMD
570.pbt: -DSPEC_USE_INNER_SIMD

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**Base Optimization Flags**

C benchmarks:
- -fast -Mnouniform -Mhugetlb -mp

Fortran benchmarks:
- -fast -Mnouniform -Mhugetlb -mp

Benchmarks using both Fortran and C:
- 553.pclvrleaf: -fast -Mnouniform -Mhugetlb -mp
- 559.pmniGhost: -fast -Mnouniform -Mhugetlb -mp -Mnomain

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**Peak Optimization Flags**

C benchmarks:

- 503.postencil: basepeak = yes
- 504.polbm: basepeak = yes
- 514.pomriq: basepeak = yes
- 552.pep: basepeak = yes
- 554.pcg: basepeak = yes
- 557.pcsp: basepeak = yes
- 570.pbt: basepeak = yes

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</tr>
</tbody>
</table>

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- Test sponsor: NVIDIA Corporation
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### Peak Optimization Flags (Continued)

- **Fortran benchmarks**:
  - 550.pmd: basepeak = yes
  - 551.ppalm: basepeak = yes
  - 555.pseismic: basepeak = yes
  - 556.psp: basepeak = yes
  - 560.pilbdc: basepeak = yes
  - 563.pswim: basepeak = yes

- **Benchmarks using both Fortran and C**:
  - 553.pclvleaf: basepeak = yes
  - 559.pmniGhost: basepeak = yes

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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC ACCEL v1.2.  