



# SPEC ACCEL™ OMP Result

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IBM Corporation  
(Test Sponsor: NVIDIA Corporation)

## Power9

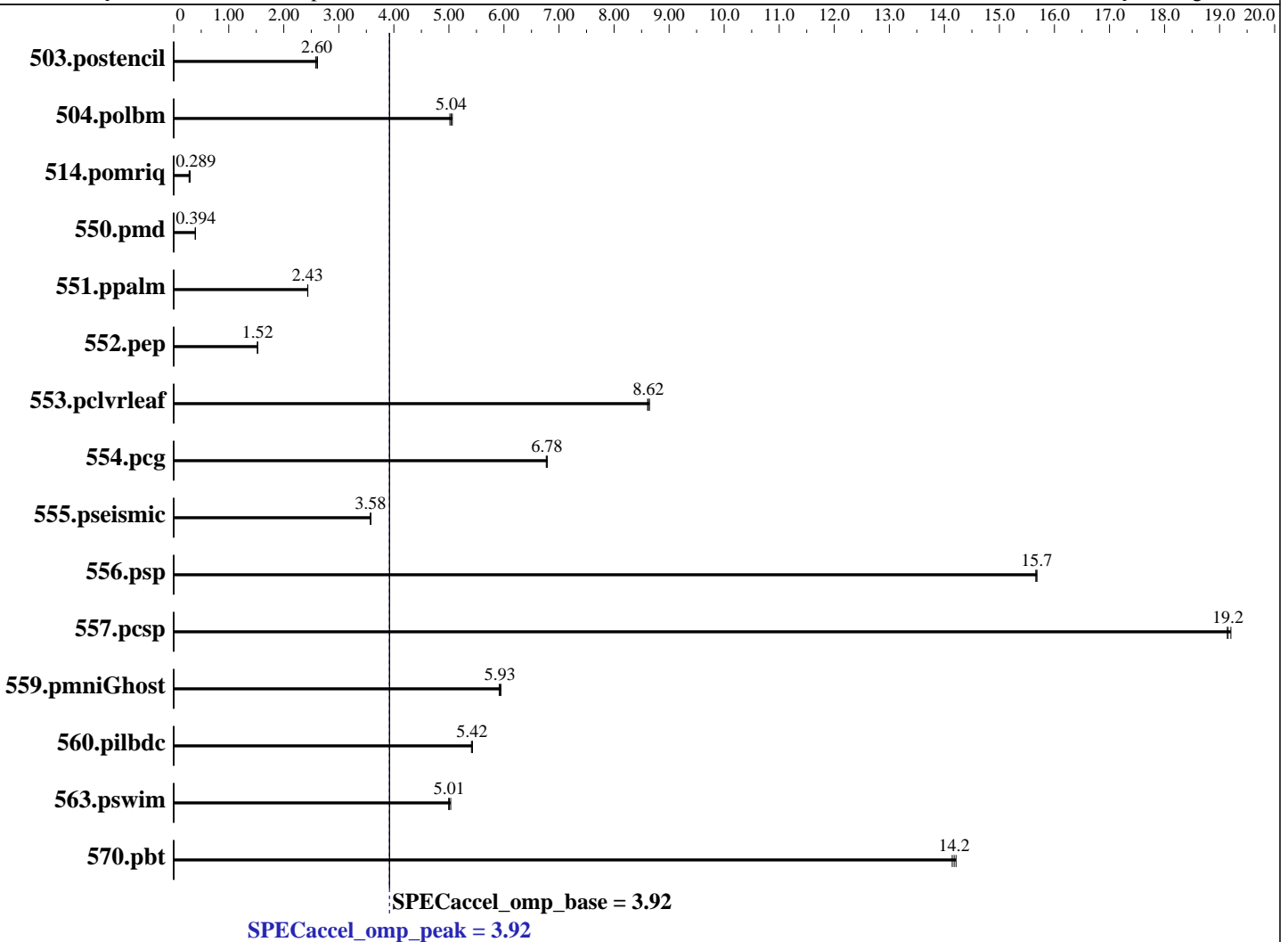
IBM Power Systems AC922 for High Performance Computing (8335-GTH)

SPECaccel\_omp\_peak = 3.92

SPECaccel\_omp\_base = 3.92

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

Test date: Aug-2018  
Hardware Availability: May-2018  
Software Availability: Aug-2018



**Hardware**

CPU Name: POWER9, altivec supported  
 CPU Characteristics:  
 CPU MHz: 3400  
 CPU MHz Maximum: 3800  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 2 chips, 20 cores/chip, 4 threads/core  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core  
 L3 Cache: 100 MB I+D on chip per chip shared NUCA / 20 cores  
 Other Cache: None

**Accelerator**

Accel Model Name: Power9  
 Accel Vendor: IBM Corporation  
 Accel Name: Power9  
 Type of Accel: CPU  
 Accel Connection: Not Applicable  
 Does Accel Use ECC: Yes  
 Accel Description: Power9, altivec supported  
 Accel Driver: Not Applicable

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### Hardware (Continued)

Memory: 128 GB (16 x 8 GB 1Rx4 PC4-2666V-R)  
Disk Subsystem: 1 x 1TB 7200 RPM SATA HDD  
Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 7.5 (Maipo)  
4.14.0-49.8.1.el7a.ibmvidia.6.1.ppc64le  
Compiler: PGI Professional Edition, Release 18.7  
File System: xfs  
System State: Run level 3 (mult-user)  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.postencil	41.7	2.61	42.3	2.58	<u>41.9</u>	<u>2.60</u>	41.7	2.61	42.3	2.58	<u>41.9</u>	<u>2.60</u>
504.polbm	24.3	5.02	24.1	5.06	<u>24.2</u>	<u>5.04</u>	24.3	5.02	24.1	5.06	<u>24.2</u>	<u>5.04</u>
514.pomriq	<u>2147</u>	<u>0.289</u>	2220	0.280	2083	0.298	<u>2147</u>	<u>0.289</u>	2220	0.280	2083	0.298
550.pmd	<u>612</u>	<u>0.394</u>	613	0.393	612	0.394	<u>612</u>	<u>0.394</u>	613	0.393	612	0.394
551.ppalm	224	2.43	<u>223</u>	<u>2.43</u>	223	2.44	224	2.43	<u>223</u>	<u>2.43</u>	223	2.44
552.pep	152	1.52	<u>151</u>	<u>1.52</u>	151	1.52	152	1.52	<u>151</u>	<u>1.52</u>	151	1.52
553.pclvrleaf	<u>133</u>	<u>8.62</u>	132	8.64	133	8.61	<u>133</u>	<u>8.62</u>	132	8.64	133	8.61
554.pcg	49.2	6.77	49.1	6.79	<u>49.1</u>	<u>6.78</u>	49.2	6.77	49.1	6.79	<u>49.1</u>	<u>6.78</u>
555.pseismic	78.9	3.57	78.7	3.58	<u>78.9</u>	<u>3.58</u>	78.9	3.57	78.7	3.58	<u>78.9</u>	<u>3.58</u>
556.psp	<u>52.2</u>	<u>15.7</u>	52.2	15.7	52.2	15.7	<u>52.2</u>	<u>15.7</u>	52.2	15.7	52.2	15.7
557.pcsp	44.7	19.2	<u>44.8</u>	<u>19.2</u>	44.9	19.1	44.7	19.2	<u>44.8</u>	<u>19.2</u>	44.9	19.1
559.pmniGhost	67.1	5.91	66.8	5.94	<u>67.0</u>	<u>5.93</u>	67.1	5.91	66.8	5.94	<u>67.0</u>	<u>5.93</u>
560.pilbdc	120	5.43	121	5.41	<u>120</u>	<u>5.42</u>	120	5.43	121	5.41	<u>120</u>	<u>5.42</u>
563.pswim	<u>31.8</u>	<u>5.01</u>	31.8	4.99	31.6	5.03	<u>31.8</u>	<u>5.01</u>	31.8	4.99	31.6	5.03
570.pbt	55.2	14.1	54.9	14.2	<u>55.0</u>	<u>14.2</u>	55.2	14.1	54.9	14.2	<u>55.0</u>	<u>14.2</u>

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

## Operating System Notes

Stacksize set to 'unlimited'



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### Platform Notes

Sysinfo program /local/home/colgrove/SPECACCEL/Docs/sysinfo  
\$Rev: 6965 \$ \$Date:: 2015-04-21 \$\$ c05a7f14b1b1765e3feldf68447e8a35  
running on wsn1 Fri Aug 10 15:37:22 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
clock : 3616.000000MHz
machine : PowerNV 8335-GTC.....
model : 8335-GTC.....
platform : PowerNV
revision : 2.2 (pvr 004e 1202)
cpu : POWER9, altivec supported
```

```
*
* 0 "physical id" tags found. Perhaps this is an older system,
* or a virtualized system. Not attempting to guess how to
* count chips/cores for this system.
*
```

160 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
From /proc/meminfo
MemTotal: 199796800 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 7.5 (Maipo)
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.5 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.5"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server
```

```
uname -a:
Linux wsn1 4.14.0-49.8.1.el7a.ibm.nvidia.6.1.ppc64le #1 SMP Tue Jun 5 13:56:12
```

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### Platform Notes (Continued)

-03 2018 ppc64le ppc64le ppc64le GNU/Linux

run-level 3 Aug 6 09:38

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

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rhel_wsn1-root	xfs	927G	72G	855G	8%	/

(End of data from sysinfo program)

### General Notes

Environment variables set by runspec before the start of the run:

ACC\_NUM\_CORES = "80"  
KMP\_THREAD\_LIMIT = "80"  
OMP\_NUM\_THREADS = "80"  
OMP\_PROC\_BIND = "true"  
OMP\_THREAD\_LIMIT = "80"

551.ppalm (base): "advec\_ws\_private" src.alt was used.

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

Benchmarks using both Fortran and C:  
pgcc pgfortran

### Base Portability Flags

503.postencil: -DSPEC\_USE\_INNER\_SIMD  
504.polbm: -DSPEC\_USE\_INNER\_SIMD

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## Base Portability Flags (Continued)

514.pomriq: -DSPEC\_USE\_INNER\_SIMD  
550.pmd: -DSPEC\_USE\_INNER\_SIMD  
551.ppalm: -DSPEC\_USE\_INNER\_SIMD  
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

## Base Optimization Flags

C benchmarks:  
-fast -mp -Mnouniform -Mfprelaxed=intrinsic

Fortran benchmarks:  
-fast -mp -Mnouniform -Mfprelaxed=intrinsic

Benchmarks using both Fortran and C:

553.pclvrleaf: -fast -mp -Mnouniform -Mfprelaxed=intrinsic

559.pmniGhost: -fast -mp -Mnouniform -Mfprelaxed=intrinsic -Mnomain

## 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

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## Peak Optimization Flags (Continued)

570.pbt: basepeak = yes

### 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.pclvrleaf: basepeak = yes

559.pmniGhost: 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](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](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](mailto:webmaster@spec.org).

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