SPEC ACCEL™ OMP Result

IBM Corporation
(Test Sponsor: NVIDIA Corporation)

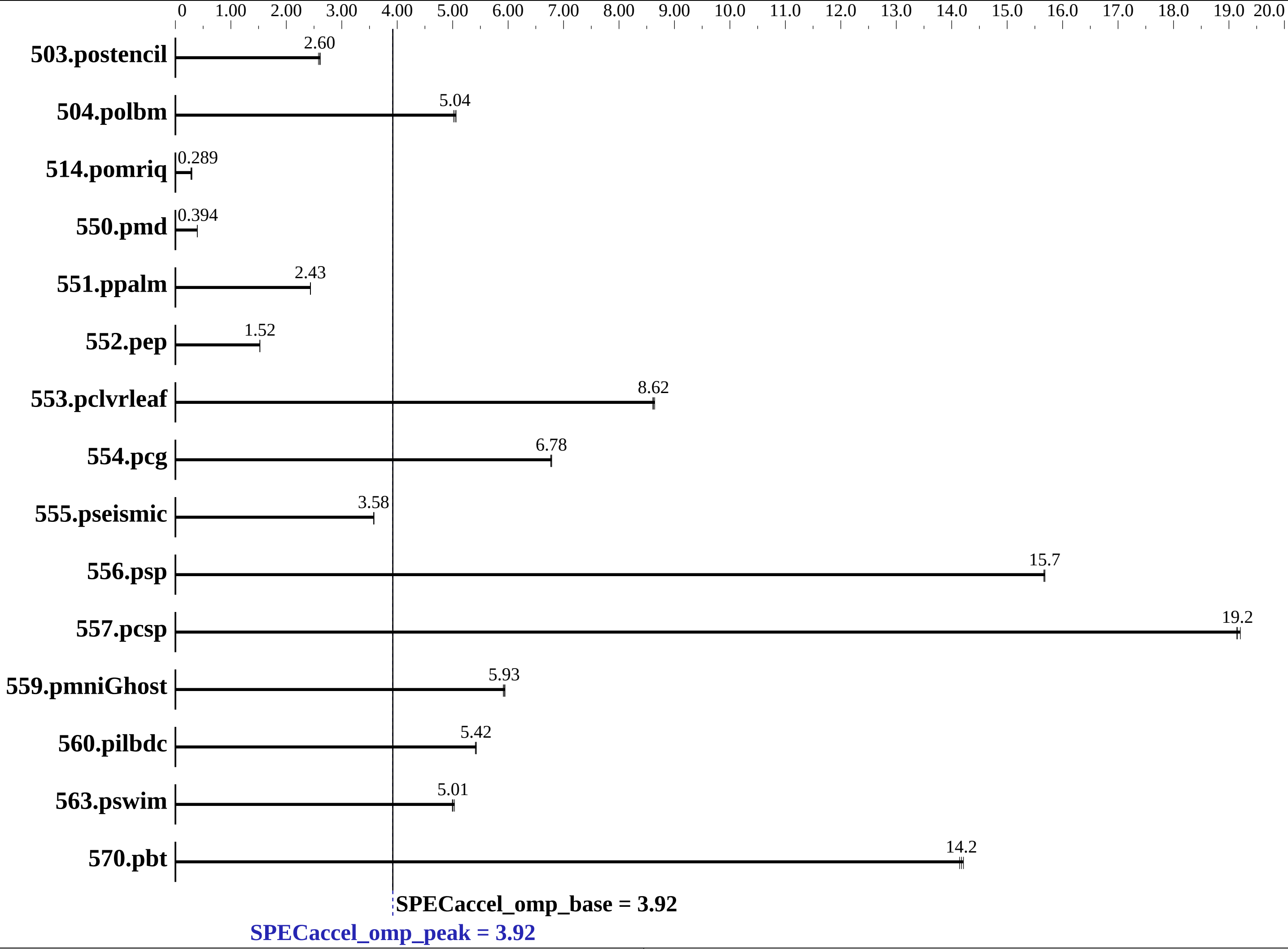
Power9

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

SPECaccel_omp_peak = 3.92

SPECaccel_omp_base = 3.92

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

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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.ibmnvidia.6.1.ppc64le
Compiler:	PGI Professional Edition, Release 18.7
File System:	xfs
System State:	Run level 3 (muilt-user)
Other Software:	None

Results Table

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

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

Operating System Notes

```
Stacksize set to 'unlimited'
```

Platform Notes

```
Sysinfo program /local/home/colgrove/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
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.ibmnvidia.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`

Continued on next page

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

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

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

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