SPEC ACCEL™ ACC Result

IBM Corporation
(Test Sponsor: NVIDIA Corporation)

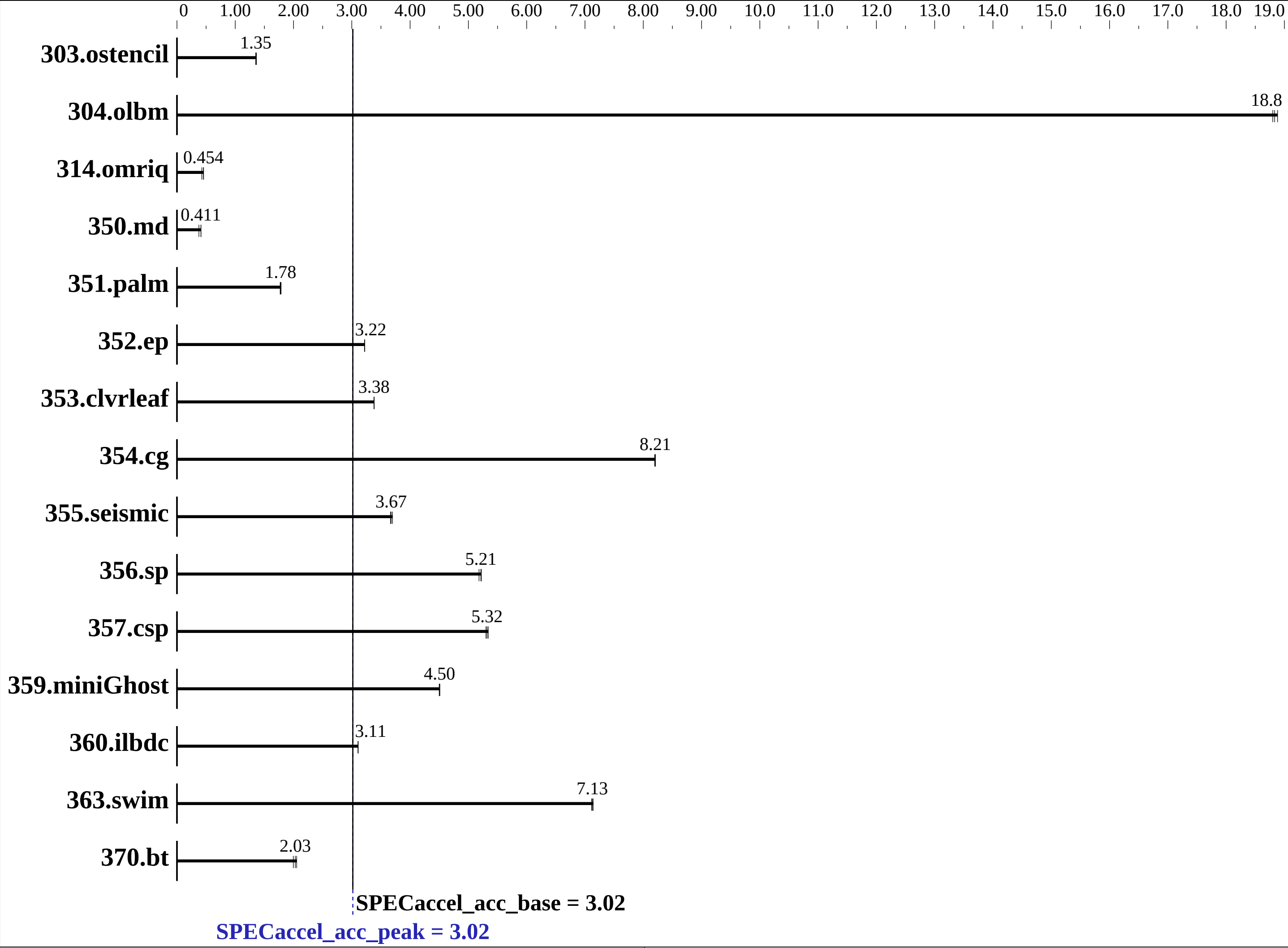
Power9

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

SPECaccel_acc_peak = 3.02

SPECaccel_acc_base = 3.02

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:	16 MB I+D off chip per 2 DIMMs

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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

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	**107**	**1.35**	106	1.36	107	1.35	**107**	**1.35**	106	1.36	107	1.35
304.olbm	24.2	18.8	**24.2**	**18.8**	24.1	18.9	24.2	18.8	**24.2**	**18.8**	24.1	18.9
314.omriq	2091	0.457	2239	0.427	**2104**	**0.454**	2091	0.457	2239	0.427	**2104**	**0.454**
350.md	612	0.412	**613**	**0.411**	669	0.377	612	0.412	**613**	**0.411**	669	0.377
351.palm	207	1.79	209	1.77	**208**	**1.78**	207	1.79	209	1.77	**208**	**1.78**
352.ep	**165**	**3.22**	165	3.22	165	3.22	**165**	**3.22**	165	3.22	165	3.22
353.clvrleaf	132	3.38	132	3.38	**132**	**3.38**	132	3.38	132	3.38	**132**	**3.38**
354.cg	49.7	8.21	**49.7**	**8.21**	49.8	8.20	49.7	8.21	**49.7**	**8.21**	49.8	8.20
355.seismic	**101**	**3.67**	101	3.66	100	3.70	**101**	**3.67**	101	3.66	100	3.70
356.sp	53.3	5.18	**52.9**	**5.21**	52.9	5.22	53.3	5.18	**52.9**	**5.21**	52.9	5.22
357.csp	**50.7**	**5.32**	50.9	5.30	50.6	5.34	**50.7**	**5.32**	50.9	5.30	50.6	5.34
359.miniGhost	81.8	4.51	**81.9**	**4.50**	82.0	4.50	81.8	4.51	**81.9**	**4.50**	82.0	4.50
360.ilbdc	**118**	**3.11**	118	3.11	118	3.11	**118**	**3.11**	118	3.11	118	3.11
363.swim	32.2	7.14	32.3	7.11	**32.3**	**7.13**	32.2	7.14	32.3	7.11	**32.3**	**7.13**
370.bt	**110**	**2.03**	112	2.00	109	2.05	**110**	**2.03**	112	2.00	109	2.05

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

Platform Notes

```
Sysinfo program /local/home/colgrove/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on wsn1 Fri Aug 10 19:23:19 2018

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
```

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Platform Notes (Continued)

```
  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
   -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
```

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Platform Notes (Continued)

```
   /dev/mapper/rhel_wsn1-root xfs   927G   73G  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"

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 Optimization Flags

C benchmarks:
`-fast -Mnouniform -Mfprelaxed=intrinsic -acc -ta=multicore`

Fortran benchmarks:
`-fast -Mnouniform -Mfprelaxed=intrinsic -acc -ta=multicore`

Benchmarks using both Fortran and C:

353.clvrleaf: `-fast -Mnouniform -Mfprelaxed=intrinsic -acc -ta=multicore`

Continued on next page

Base Optimization Flags (Continued)

359.miniGhost: `-fast -Mnouniform -Mfprelaxed=intrinsic -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.clvrleaf: `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

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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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