IBM
(Test Sponsor: NVIDIA Corporation)
IBM POWER9 CPU
Power System AC922

SPECaccel_omp_peak = 3.86
SPECaccel_omp_base = 3.86

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

Test date: Jun-2019
Hardware Availability: Aug-2018
Software Availability: Apr-2019

SPECaccel_omp_peak = 3.86
SPECaccel_omp_base = 3.86

Hardware
CPU Name: POWER9 2.2 (pvr 004e 1202), altivec supported
CPU Characteristics:
CPU MHz: 2300
CPU MHz Maximum: 3800
FPU: Integrated
CPU(s) enabled: 20 cores, 2 chips, 20 cores/chip, 4 threads/core
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 120 MB I+D on chip per chip
Other Cache: None

Accelerator
Accel Model Name: POWER9 2.2 (pvr 004e 1202), altivec supported
Accel Vendor: IBM
Accel Name: IBM POWER9 CPU
Type of Accel: CPU
Accel Connection: Not Applicable
Does Accel Use ECC: Yes
Accel Description: --
Accel Driver: --
IBM
(Test Sponsor: NVIDIA Corporation)
IBM POWER9 CPU
Power System AC922

SPECaccl_omp_peak = 3.86
SPECaccl_omp_base = 3.86

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Tested by: NVIDIA Corporation

Hardware (Continued)
Memory: 128 GB (16 x 8 GB PC4-21300)
Disk Subsystem: 1 TB Seagate SATA HDD
Other Hardware: None

Software
Operating System: Red Hat Enterprise Linux Server release 7.5
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>
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</tr>
</tbody>
</table>

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

Operating System Notes

Stacksize set to 'unlimited'
IBM
(Test Sponsor: NVIDIA Corporation)

IBM POWER9 CPU
Power System AC922

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ACCEL license: 019
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Tested by: NVIDIA Corporation

Test date: Jun-2019
Hardware Availability: Aug-2018
Software Availability: Apr-2019

Platform Notes
Sysinfo program /local/home/toepfer/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on perf-wsn1 Thu Jun 6 08:30:15 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
  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: 150251584 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 perf-wsn1 4.14.0-49.8.1.el7a.ibmnvidia.6.1.ppc64le #1 SMP Tue Jun 5
Continued on next page
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Platform Notes (Continued)

run-level 3 May 24 11:17

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

Filesystem       Type  Size  Used  Avail  Use% Mounted on
/dev/mapper/rhel_wsn1-root xfs   927G  117G  811G  13% /

General Notes

Environment variables set by runspec before the start of the run:
KMP_ALL_THREADS = "80"
OMP_NUM_THREADS = "80"
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
552.pep: -DSPEC_USE_INNER_SIMD
553.pclvleaf: -DSPEC_USE_INNER_SIMD
554.pcg: -DSPEC_USE_INNER_SIMD
555.pseismic: -DSPEC_USE_INNER_SIMD
556.psp: -DSPEC_USE_INNER_SIMD

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**SPEC ACCEL OMP Result**

**IBM**  
(Test Sponsor: NVIDIA Corporation)

**IBM POWER9 CPU**  
Power System AC922

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Tested by: NVIDIA Corporation

### Base Portability Flags (Continued)

- 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`

Fortran benchmarks:

- `-fast`  
- `-mp`  
- `-Mnouniform`  
- `-Mfprelaxed`

Benchmarks using both Fortran and C:

- 553.pclvrleaf: `-fast`  
  `-Mnouniform`  
  `-Mfprelaxed`
- 559.pmniGhost: `-fast`  
  `-Mnouniform`  
  `-Mfprelaxed`  
  `-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`
- 570.pbt: `basepeak = yes`

Fortran benchmarks:

- 550.pmd: `basepeak = yes`
- 551.ppalm: `basepeak = yes`

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SPEC ACCEL OMP Result

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Peak Optimization Flags (Continued)

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

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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.