SPEC ACCEL™ OMP Result

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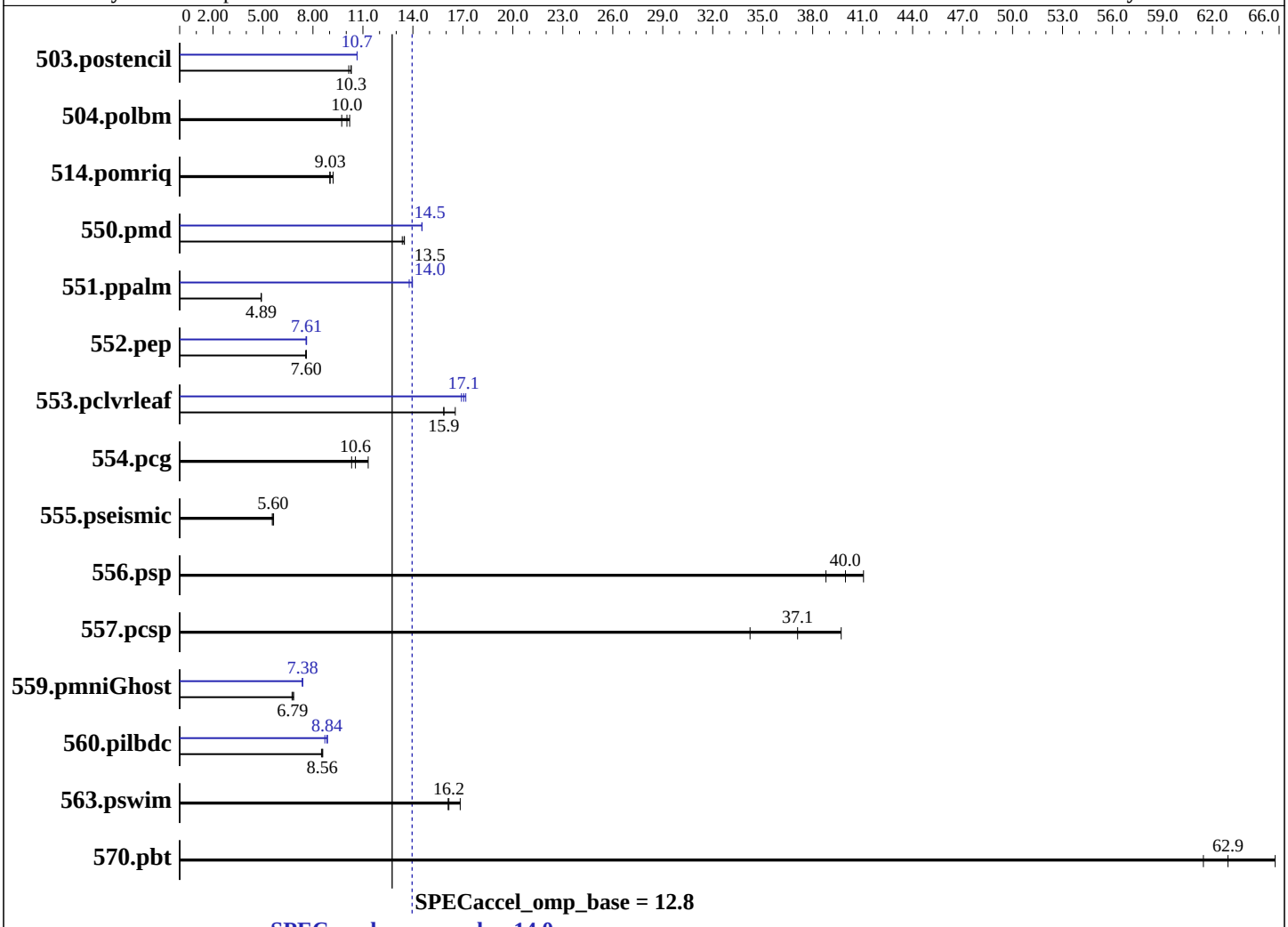
Supermicro
Intel Xeon Platinum 8592+
UP SuperServer SYS-521C-NR

SPECaccel_omp_peak = 14.0

SPECaccel_omp_base = 12.8

ACCEL license: 6569
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Jan-2024
Hardware Availability: Dec-2023
Software Availability: Oct-2023



Hardware

CPU Name:	Intel Xeon Platinum 8592+
CPU Characteristics:	Intel Turbo Boost Technology up to 3.90 GHz
CPU MHz:	1900
CPU MHz Maximum:	3900
FPU:	Integrated
CPU(s) enabled:	64 cores, 1 chip, 64 cores/chip, 2 threads/core
CPU(s) orderable:	1 chip
Primary Cache:	32 KB I + 48 KB D on chip per core
Secondary Cache:	2 MB I+D on chip per core
L3 Cache:	320 MB I+D on chip per chip
Other Cache:	None

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Accelerator

Accel Model Name:	Intel Xeon Platinum 8592+
Accel Vendor:	Intel
Accel Name:	Intel Xeon Platinum 8592+
Type of Accel:	CPU
Accel Connection:	N/A
Does Accel Use ECC:	Yes
Accel Description:	1 x Intel Xeon Platinum 8592+
Accel Driver:	N/A

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Hardware (Continued)

Memory: 512 GB (8 x 64 GB 2Rx4 PC5-5600B-R)
Disk Subsystem: 1 x 240 GB SATA III SSD
Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 15 SP5
Kernel 5.14.21-150500.53-default
Compiler: C/C++/Fortran: Version 2024.0.0.20231017 of Intel oneAPI DPC++/C++
File System: xfs
System State: Run-level 3 (multi-user)
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.postencil	**10.6**	**10.3**	10.6	10.3	10.7	10.2	10.2	10.6	10.2	10.7	**10.2**	**10.7**
504.polbm	12.0	10.2	**12.2**	**10.0**	12.5	9.73	12.0	10.2	**12.2**	**10.0**	12.5	9.73
514.pomriq	68.9	9.01	67.4	9.21	**68.7**	**9.03**	68.9	9.01	67.4	9.21	**68.7**	**9.03**
550.pmd	18.0	13.4	**17.9**	**13.5**	17.9	13.5	**16.6**	**14.5**	16.6	14.6	16.6	14.5
551.ppalm	111	4.90	**111**	**4.89**	111	4.89	39.5	13.8	38.9	14.0	**39.0**	**14.0**
552.pep	**30.4**	**7.60**	30.4	7.61	30.5	7.56	30.3	7.62	**30.3**	**7.61**	30.5	7.58
553.pclvrleaf	72.2	15.8	**72.2**	**15.9**	69.2	16.5	67.7	16.9	**67.1**	**17.1**	66.7	17.2
554.pcg	**31.6**	**10.6**	32.3	10.3	29.4	11.3	**31.6**	**10.6**	32.3	10.3	29.4	11.3
555.pseismic	50.0	5.64	**50.3**	**5.60**	50.7	5.56	50.0	5.64	**50.3**	**5.60**	50.7	5.56
556.psp	**20.5**	**40.0**	21.1	38.8	19.9	41.1	**20.5**	**40.0**	21.1	38.8	19.9	41.1
557.pcsp	21.6	39.7	**23.2**	**37.1**	25.1	34.2	21.6	39.7	**23.2**	**37.1**	25.1	34.2
559.pmniGhost	58.0	6.84	58.9	6.75	**58.5**	**6.79**	53.7	7.39	53.9	7.36	**53.8**	**7.38**
560.pilbdc	76.0	8.59	76.7	8.51	**76.3**	**8.56**	**73.9**	**8.84**	74.9	8.72	73.6	8.88
563.pswim	9.44	16.8	**9.84**	**16.2**	9.87	16.1	9.44	16.8	**9.84**	**16.2**	9.87	16.1
570.pbt	12.7	61.5	**12.4**	**62.9**	11.9	65.8	12.7	61.5	**12.4**	**62.9**	11.9	65.8

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

Platform Notes

```
Sysinfo program /home/accel/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on 135-175-25 Tue Jan  9 11:25:44 2024

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

Continued on next page

Platform Notes (Continued)

```
  http://www.spec.org/accel/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : INTEL(R) XEON(R) PLATINUM 8592+
      1 "physical id"s (chips)
      128 "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 : 64
      siblings  : 128
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
      22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
      47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
   cache size : 327680 KB

From /proc/meminfo
   MemTotal:       528007580 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP5"
      VERSION_ID="15.5"
      PRETTY_NAME="SUSE Linux Enterprise Server 15 SP5"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15:sp5"

uname -a:
   Linux 135-175-25 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10
   07:56:26 UTC 2023 (b630043) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 20 17:22

SPEC is set to: /home/accel
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   221G   36G  186G  17% /
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.

  BIOS American Megatrends International, LLC. 2.1 12/06/2023
```

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Platform Notes (Continued)

```
    Memory:
     8x Micron Technology MTC40F2046S1RC56BD1 64 GB 2 rank 5600 MT/s

  (End of data from sysinfo program)
```

General Notes

```
------------------------------------------------------------------------
BIOS Setting:
  Power Performance Tuning = BIOS Controls EPB
  ENERGY_PERF_BIAS_CFG Mode = Performance
  SNC (Sub NUMA) = Enable SNC2 (2-clusters)
  KTI Prefetch = Enable
  DCU Streamer Prefetcher = Disable
  LLC Dead Line Alloc = Disable
  Stale AtoS = Disable
------------------------------------------------------------------------
Spectre and Meltdown
  NA: The test sponsor attests, as of date of publication, the CVE-2017-5754 (Meltdown)
  is mitigated in the system as tested and documented.
  Yes: The test sponsor attests, as of date of publication, the 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.
------------------------------------------------------------------------
OS tunning:
  Stack size set to unlimited using "ulimit -s unlimited"
------------------------------------------------------------------------
IPMI setting:
  Fan Mode: Full Speed
```

Base Compiler Invocation

C benchmarks:
icx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icx ifort

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.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 -nofor-main
560.pilbdc: -DSPEC_USE_INNER_SIMD
563.pswim: -DSPEC_USE_INNER_SIMD
570.pbt: -DSPEC_USE_INNER_SIMD

Base Optimization Flags

C benchmarks:
-qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high
-fimf-precision=low:exp,sin,cos,sincos,log
-qopt-multiple-gather-scatter-by-shuffles

Fortran benchmarks:
-qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high
-fimf-precision=low:exp,sin,cos,sincos,log
-qopt-multiple-gather-scatter-by-shuffles

Benchmarks using both Fortran and C:
-qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high
-fimf-precision=low:exp,sin,cos,sincos,log
-qopt-multiple-gather-scatter-by-shuffles

Peak Compiler Invocation

C benchmarks:
icx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icx ifort

Peak 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 -DSPEC_HOST_FFTW3
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 -nofor-main
560.pilbdc: -DSPEC_USE_INNER_SIMD
563.pswim: -DSPEC_USE_INNER_SIMD
570.pbt: -DSPEC_USE_INNER_SIMD

Peak Optimization Flags

C benchmarks:

503.postencil: -qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high
-fimf-precision=low:exp,sin,cos,sincos,log
-qopt-multiple-gather-scatter-by-shuffles

504.polbm: basepeak = yes

514.pomriq: basepeak = yes

552.pep: Same as 503.postencil

554.pcg: basepeak = yes

557.pcsp: basepeak = yes

570.pbt: basepeak = yes

Fortran benchmarks:

550.pmd: -qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high
-fimf-precision=low:exp,sin,cos,sincos,log
-qopt-multiple-gather-scatter-by-shuffles -fimf-precision=low
-ip

551.ppalm: -qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high
-fimf-precision=low:exp,sin,cos,sincos,log
-qopt-multiple-gather-scatter-by-shuffles
-I/opt/fftw-3.3.10/include -L/opt/fftw-3.3.10/lib

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Peak Optimization Flags (Continued)

555.pseismic: `basepeak = yes`

556.psp: `basepeak = yes`

560.pilbdc: `-qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high -fimf-precision=low:exp,sin,cos,sincos,log -qopt-multiple-gather-scatter-by-shuffles`

563.pswim: `basepeak = yes`

Benchmarks using both Fortran and C:
`-qopenmp -Ofast -xCORE-AVX512 -qopt-zmm-usage=high -fimf-precision=low:exp,sin,cos,sincos,log -qopt-multiple-gather-scatter-by-shuffles`

Peak Other Flags

Fortran benchmarks:

551.ppalm: `-lfftw3`

The flags files that were used to format this result can be browsed at
https://www.spec.org/accel/flags/Intel-icc2021.2-linux64.20230726.html
https://www.spec.org/accel/flags/Supermicro-Platform-Settings-V1.2-SPR-revF.html

You can also download the XML flags sources by saving the following links:
https://www.spec.org/accel/flags/Intel-icc2021.2-linux64.20230726.xml
https://www.spec.org/accel/flags/Supermicro-Platform-Settings-V1.2-SPR-revF.xml

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

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