



SPEC® OMPG2012 Result

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Intel

Intel Server System R2208WFTZS (2 x Intel Xeon Platinum 8280L, DDR4-2933, Turbo OFF, SMT ON)

SPECompG_peak2012 = 27.0

SPECompG_base2012 = 22.3

OMP2012 license:13

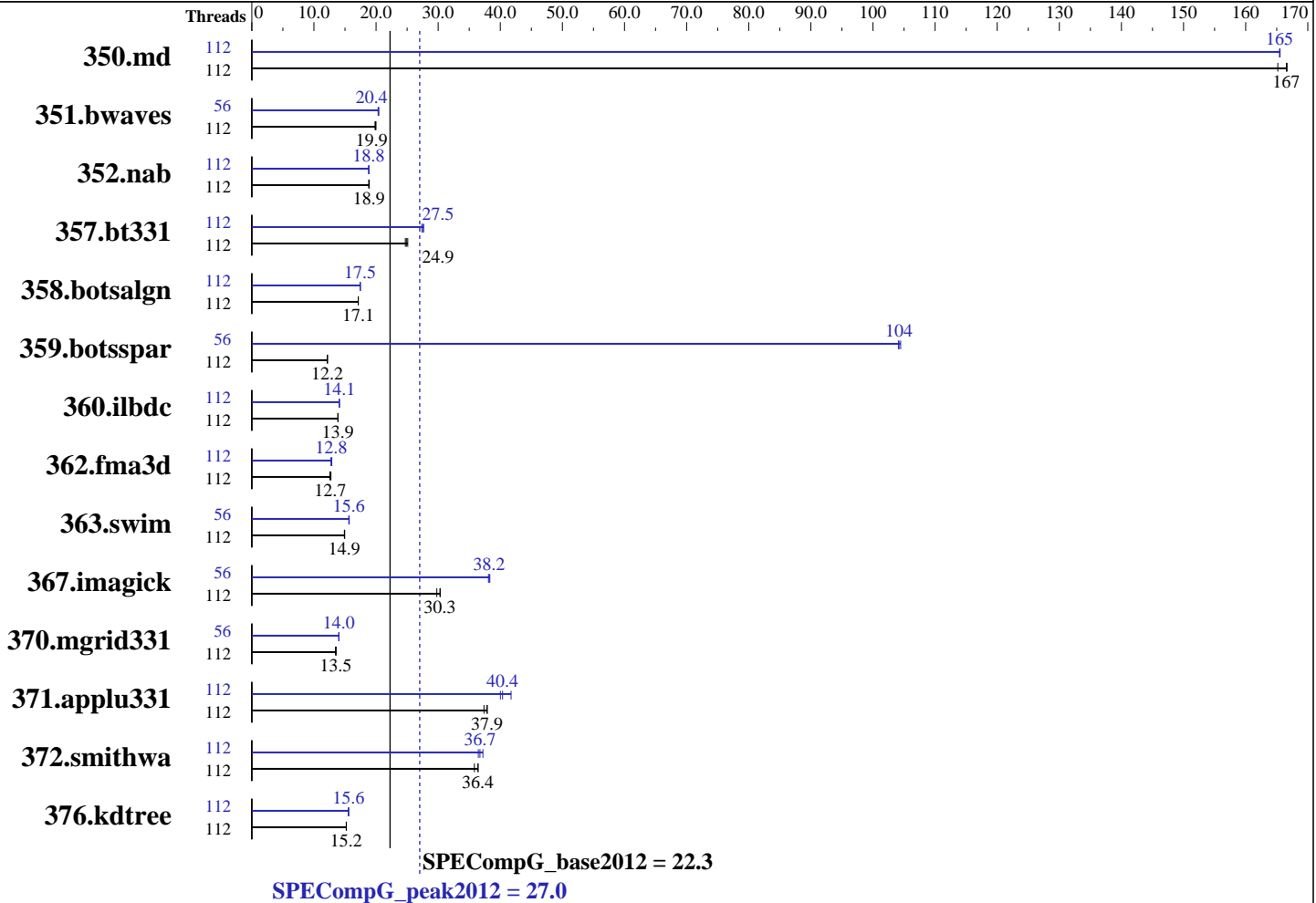
Test sponsor: Intel

Tested by: Intel

Test date: Mar-2019

Hardware Availability: Apr-2019

Software Availability: Jan-2019



Hardware

CPU Name: Intel Xeon Platinum 8280L
 CPU Characteristics: Turbo OFF, SMT ON
 CPU MHz: 2700
 CPU MHz Maximum: 2700
 FPU: Integrated
 CPU(s) enabled: 56 cores, 2 chips, 28 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 Chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core
 L3 Cache: 38.5 MB I+D on chip per chip
 Other Cache: None
 Memory: 192 GB (12 x 16 GB 2Rx8 DDR4-2933Y-R)
 Disk Subsystem: Panasas ActiveStor 14 (124TB connected via 10GB Ethernet)
 Other Hardware: None
 Base Threads Run: 112

Continued on next page

Software

Operating System: Oracle Linux Server release 7.6
 Compiler: C/C++/Fortran: Version 19.0.2.187 of Intel Composer XE for Linux
 Auto Parallel: No
 File System: PanFS
 System State: Run Level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other Software: None



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Minimum Peak Threads: 56
Maximum Peak Threads: 112

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	112	27.8	167	28.0	165	27.8	167	112	28.0	166	28.0	165	28.0	165
351.bwaves	112	228	19.8	227	19.9	227	20.0	56	223	20.3	222	20.4	222	20.4
352.nab	112	206	18.9	207	18.8	206	18.9	112	207	18.8	207	18.8	206	18.9
357.bt331	112	190	24.9	192	24.7	189	25.1	112	172	27.5	171	27.7	173	27.4
358.botsalgn	112	254	17.1	254	17.1	254	17.1	112	249	17.5	249	17.5	249	17.5
359.botsspar	112	432	12.1	431	12.2	432	12.2	56	50.4	104	50.4	104	50.3	104
360.ilbdc	112	256	13.9	257	13.9	257	13.9	112	253	14.1	253	14.1	252	14.1
362.fma3d	112	300	12.7	302	12.6	298	12.7	112	297	12.8	295	12.9	298	12.7
363.swim	112	303	15.0	304	14.9	304	14.9	56	290	15.6	289	15.6	289	15.7
367.imagick	112	232	30.3	232	30.3	236	29.8	56	185	38.1	183	38.3	184	38.2
370.mgrid331	112	326	13.5	326	13.6	328	13.5	56	315	14.0	315	14.0	315	14.0
371.applu331	112	160	37.9	162	37.4	160	37.9	112	150	40.4	145	41.7	151	40.0
372.smithwa	112	150	35.8	147	36.4	147	36.4	112	144	37.2	147	36.5	146	36.7
376.kdtree	112	296	15.2	296	15.2	296	15.2	112	290	15.5	289	15.6	289	15.6

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

Platform Notes

Sysinfo program /global/panfs02/innl/aknyazel/OMP2012/1.1/Docs/sysinfo
Revision 563 of 2016-06-10 (097295389cf6073d8c3b03fa376740a5)
running on elc02 Tue Mar 26 13:57:24 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/omp2012/Docs/config.html#sysinfo>

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) Platinum 8280L CPU @ 2.70GHz
2 "physical id"s (chips)
112 "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 : 28
```

```
siblings : 56
```

```
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
```

```
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
```

```
cache size : 39424 KB
```

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Platform Notes (Continued)

```

From /proc/meminfo
MemTotal:      196689540 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
oracle-release: Oracle Linux Server release 7.6
os-release:
  NAME="Oracle Linux Server"
  VERSION="7.6"
  ID="ol"
  VARIANT="Server"
  VARIANT_ID="server"
  VERSION_ID="7.6"
  PRETTY_NAME="Oracle Linux Server 7.6"
  ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
system-release: Oracle Linux Server release 7.6
system-release-cpe: cpe:/o:oracle:linux:7:6:server

```

```

uname -a:
Linux elc02 3.10.0-957.5.1.el7.crt1.x86_64 #1 SMP Fri Feb 1 14:04:43 MST 2019
x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Mar 25 16:12

```

SPEC is set to: /global/panfs02/innl/aknyazel/OMP2012/1.1
Filesystem      Type      Size  Used Avail Use% Mounted on
panfs://36.101.212.1/innl panfs 269T  200T   70T  75% /global/panfs02/innl

```

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.

(End of data from sysinfo program)

General Notes

```

=====
General base OMP Library Settings
  ENV_KMP_AFFINITY=compact,0,verbose

```

```

=====
General peak OMP Library Settings
  ENV_KMP_AFFINITY=compact,0,verbose

```

=====

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General Notes (Continued)

Per benchmark peak OMP Library Settings

=====
System settings notes:

Intel Turbo Boost Technology (Turbo) : Disabled

=====
General OMP Library Settings

KMP_LIBRARY=turnaround
KMP_STACKSIZE=292M
KMP_BLOCKTIME=infinite
OMP_DYNAMIC=FALSE
OMP_NESTED=FALSE
OMP_SCHEDULE=static

Spectre and Meltdown

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.

=====
351.bwaves:peak:

ENV_KMP_AFFINITY=compact,1,verbose

=====
359.botsspar:peak:

ENV_KMP_AFFINITY=compact,1,verbose

=====
363.swim:peak:

ENV_KMP_AFFINITY=compact,1,verbose

=====
367.imagick:peak:

ENV_KMP_AFFINITY=compact,1,verbose

=====
370.mgrid331:peak:

ENV_KMP_AFFINITY=compact,1,verbose

Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

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Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Base Portability Flags

350.md: -FR
357.bt331: -mcmmodel=medium
363.swim: -mcmmodel=medium
367.imagick: -std=c99

Base Optimization Flags

C benchmarks:
-O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high -fp-model fast=2
-ansi-alias -no-prec-div -no-prec-sqrt -ipo -qopt-prefetch=0

C++ benchmarks:
-O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high -fp-model fast=2
-ansi-alias -no-prec-div -no-prec-sqrt -ipo -qopt-prefetch=0

Fortran benchmarks:
-O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high -fp-model fast=2
-ansi-alias -no-prec-div -no-prec-sqrt -ipo -qopt-prefetch=0
-align all

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Peak Portability Flags

350.md: -FR
357.bt331: -mcmmodel=medium
363.swim: -mcmmodel=medium

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Peak Portability Flags (Continued)

367.imagick: -std=c99

Peak Optimization Flags

C benchmarks:

352.nab: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt
-ipo -qopt-prefetch=0

358.botsalgn: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt

359.botsspar: Same as 358.botsalgn

367.imagick: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt -ipo

372.smithwa: Same as 352.nab

C++ benchmarks:

-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -fno-alias -no-prec-div
-no-prec-sqrt -qopt-prefetch=1

Fortran benchmarks:

350.md: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt
-ipo -qopt-prefetch=0 -align all

351.bwaves: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt
-ipo -qopt-prefetch=2 -align all

357.bt331: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt
-ipo -qopt-prefetch=1 -align all

360.ilbdc: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt
-ipo -qopt-prefetch=4 -align all

362.fma3d: Same as 350.md

363.swim: -O3 -qopenmp -xCORE-AVX512 -qopt-zmm-usage=high
-fp-model fast=2 -no-prec-div -no-prec-sqrt -fno-alias
-qopt-malloc-options=3 -ipo -qopt-prefetch=0 -align all

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Peak Optimization Flags (Continued)

370.mgrid331: -O3 -qopenmp -xCORE-AVX2 -fp-model fast=2 -no-prec-div
-no-prec-sqrt -fno-alias -qopt-malloc-options=3 -ipo
-qopt-prefetch=0 -align all

371.applu331: -O3 -qopenmp -xCORE-AVX2 -fp-model fast=2 -fno-alias
-no-prec-div -no-prec-sqrt -qopt-prefetch=0 -align all

The flags file that was used to format this result can be browsed at

<http://www.spec.org/omp2012/flags/Intel-ic19-linux64.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/omp2012/flags/Intel-ic19-linux64.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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