



# SPEC® OMPG2012 Result

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## Intel

Intel Server System R2208WFTZS (2 x Intel Xeon Platinum 8260L, DDR4-2933, Turbo OFF, SMT ON)

SPECompG\_peak2012 = 23.3

SPECompG\_base2012 = 19.3

OMP2012 license:13

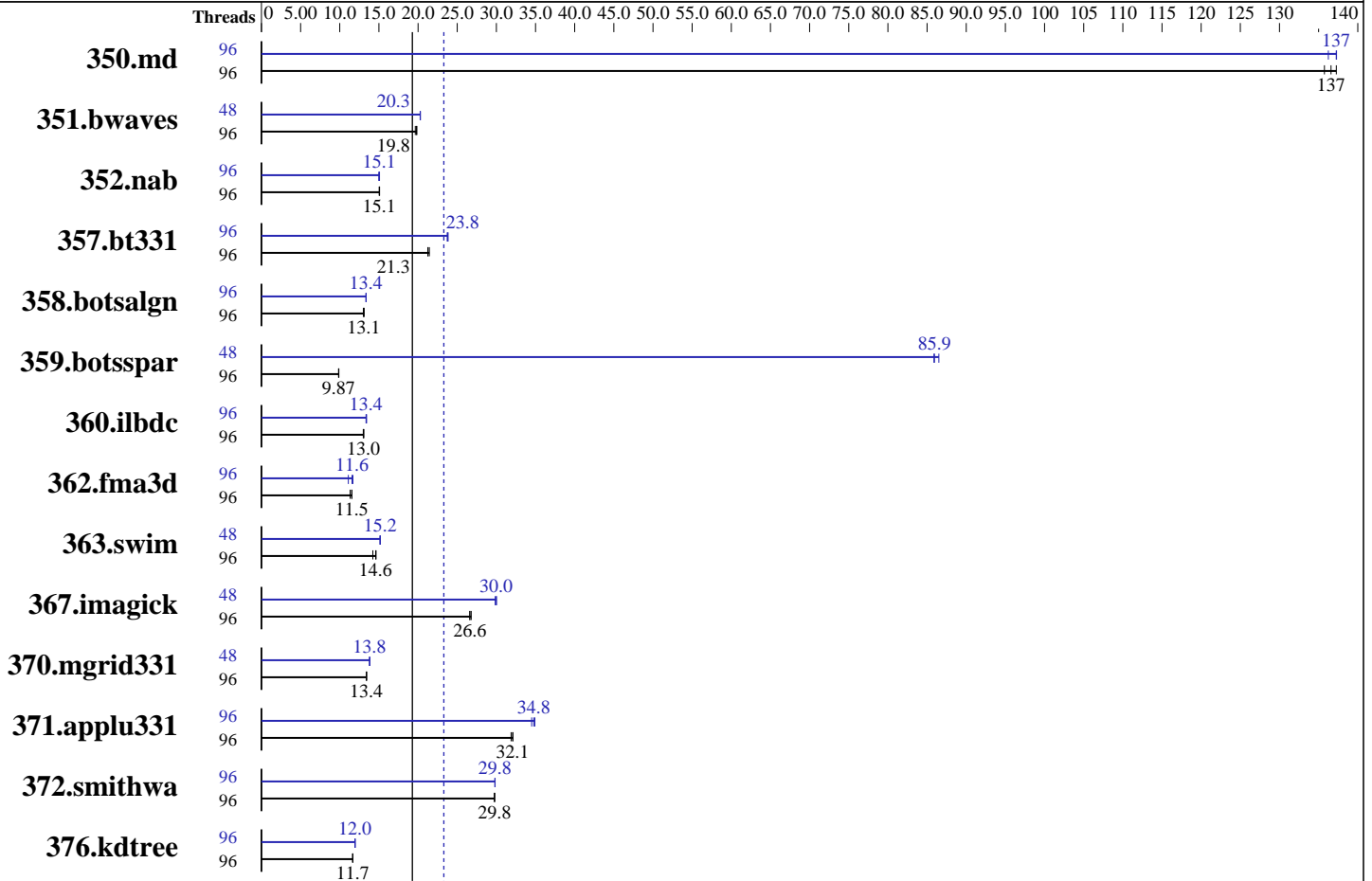
Test sponsor: Intel

Tested by: Intel

Test date: Mar-2019

Hardware Availability: Apr-2019

Software Availability: Jan-2019



SPECompG\_base2012 = 19.3

SPECompG\_peak2012 = 23.3

### Hardware

CPU Name: Intel Xeon Platinum 8260L  
 CPU Characteristics: Turbo OFF, SMT ON  
 CPU MHz: 2400  
 CPU MHz Maximum: 2400  
 FPU: Integrated  
 CPU(s) enabled: 48 cores, 2 chips, 24 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: 35.75 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: 96

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: 48

Maximum Peak Threads: 96

## Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	96	34.1	136	<u>33.9</u>	<u>137</u>	33.7	137	96	<u>33.7</u>	<u>137</u>	34.0	136	33.7	137
351.bwaves	96	228	19.8	231	19.6	<u>229</u>	<u>19.8</u>	48	224	20.3	223	20.3	<u>223</u>	<u>20.3</u>
352.nab	96	258	15.1	<u>258</u>	<u>15.1</u>	259	15.0	96	258	15.1	260	15.0	<u>258</u>	<u>15.1</u>
357.bt331	96	<u>223</u>	<u>21.3</u>	223	21.3	221	21.4	96	<u>199</u>	<u>23.8</u>	199	23.8	200	23.7
358.botsalgn	96	332	13.1	334	13.0	<u>332</u>	<u>13.1</u>	96	326	13.4	<u>326</u>	<u>13.4</u>	326	13.4
359.botsspar	96	<u>532</u>	<u>9.87</u>	533	9.85	531	9.88	48	<u>61.1</u>	<u>85.9</u>	61.1	85.9	60.7	86.5
360.ilbdc	96	274	13.0	272	13.1	<u>273</u>	<u>13.0</u>	96	<u>266</u>	<u>13.4</u>	265	13.4	266	13.4
362.fma3d	96	<u>329</u>	<u>11.5</u>	336	11.3	329	11.5	96	343	11.1	<u>328</u>	<u>11.6</u>	325	11.7
363.swim	96	318	14.2	<u>311</u>	<u>14.6</u>	309	14.6	48	300	15.1	<u>298</u>	<u>15.2</u>	298	15.2
367.imagick	96	<u>264</u>	<u>26.6</u>	262	26.8	264	26.6	48	236	29.8	234	30.0	<u>235</u>	<u>30.0</u>
370.mgrid331	96	330	13.4	329	13.4	<u>330</u>	<u>13.4</u>	48	<u>320</u>	<u>13.8</u>	320	13.8	320	13.8
371.applu331	96	<u>189</u>	<u>32.1</u>	190	31.9	189	32.1	96	176	34.5	<u>174</u>	<u>34.8</u>	174	34.9
372.smithwa	96	180	29.8	180	29.8	<u>180</u>	<u>29.8</u>	96	<u>180</u>	<u>29.8</u>	180	29.8	180	29.8
376.kdtree	96	386	11.7	386	11.7	<u>386</u>	<u>11.7</u>	96	377	11.9	376	12.0	<u>376</u>	<u>12.0</u>

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 epb137 Sat Mar 16 01:21:23 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 8260L CPU @ 2.40GHz
 2 "physical id"s (chips)
 96 "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 : 24
```

```
siblings : 48
```

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

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

```
cache size : 36608 KB
```

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## Platform Notes (Continued)

From /proc/meminfo

MemTotal: 196678404 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 epb137 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 11 13:26

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	199T	71T	74%	/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

Submitted\_by: "Knyazev, Alexander" <Alexander.Knyazev@intel.com>

Submitted: Tue Mar 26 09:42:41 EDT 2019

Submission: omp2012-20190326-00175.sub

=====  
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



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**Tested by:** Intel

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**Software Availability:** Jan-2019

## Base Compiler Invocation

C benchmarks:  
icc

C++ benchmarks:  
icpc

Fortran benchmarks:  
ifort

## Base Portability Flags

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



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## Peak Portability Flags

350.md: -FR  
357.bt331: -mcmmodel=medium  
363.swim: -mcmmodel=medium  
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: -O3 -qopenmp -xCORE-AVX2 -fp-model fast=2 -fno-alias  
-no-prec-div -no-prec-sqrt -ipo -qopt-prefetch=0

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

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## Peak Optimization Flags (Continued)

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

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 other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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