# SPEC® OMPG2012 Result

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## Intel

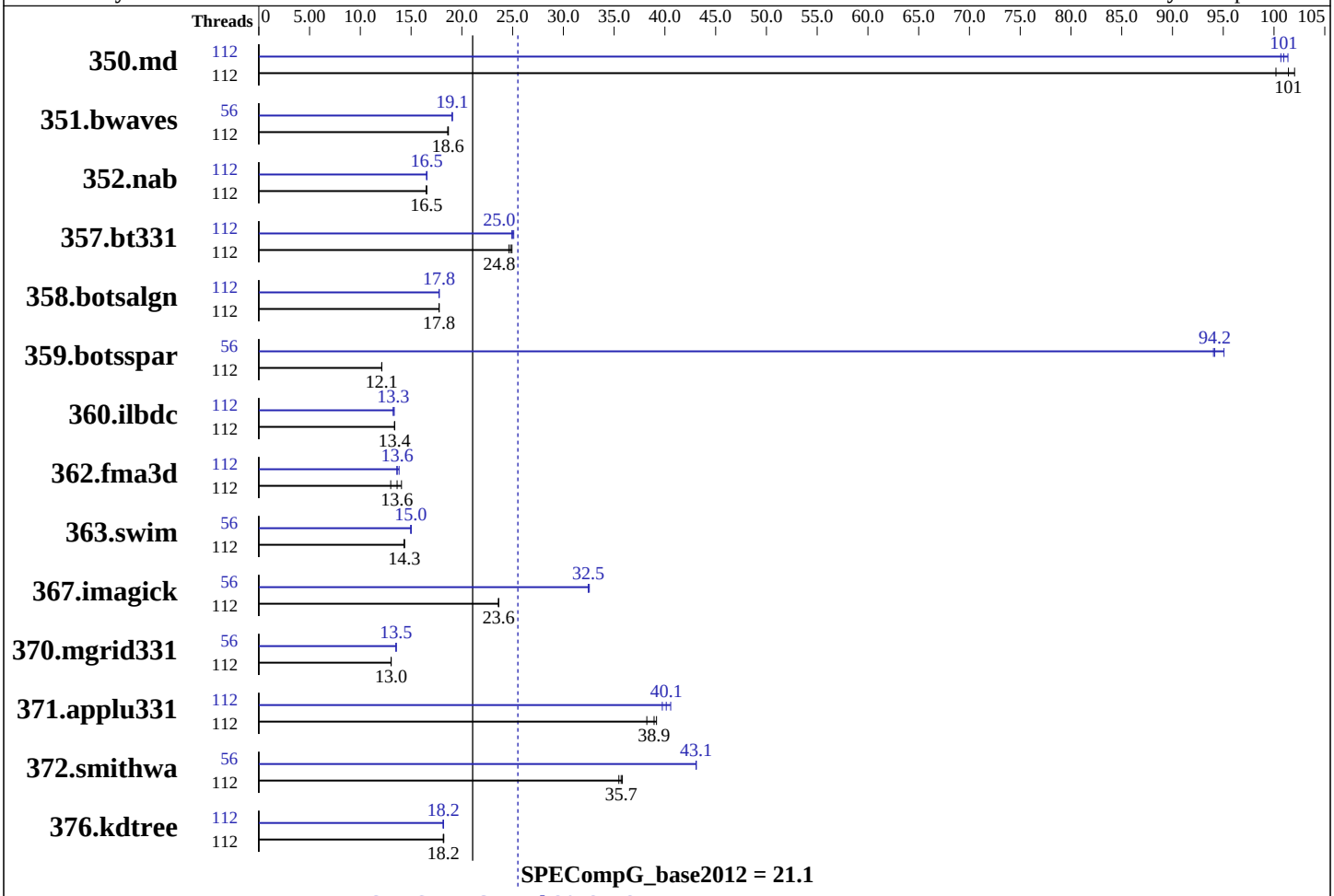
Intel Server System R2208WFTZS (2 x Intel Xeon Platinum 8180, DDR4-2666, SMT ON Turbo ON)

**SPECompG_peak2012 = 25.5**

**SPECompG_base2012 = 21.1**

**OMP2012 license:** 13
**Test sponsor:** Intel
**Tested by:** Intel

**Test date:** Jul-2017
**Hardware Availability:** Jul-2017
**Software Availability:** Sep-2017




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon Platinum 8180 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.8 GHz |
| CPU MHz: | 2500 |
| CPU MHz Maximum: | 3800 |
| 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 2Rx4 DDR4-2666) |
| Disk Subsystem: | NFS via 10GBPS Ethernet (Size 20TB) |
| Other Hardware: | -- |
| Base Threads Run: | 112 |
| Minimum Peak Threads: | 56 |

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### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 7.2 |
| Compiler: | C/C++/Fortran: Version 18.0.0.082 of Intel Compiler for Linux Beta Build 20170510 |
| Auto Parallel: | No |
| File System: | Linux ext3 |
| System State: | Default |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| Other Software: | None |

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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 | 46.2 | 100 | 45.4 | 102 | **45.7** | **101** | 112 | **45.9** | **101** | 45.7 | 101 | 46.0 | 101 |
| 351.bwaves | 112 | 243 | 18.7 | **243** | **18.6** | 243 | 18.6 | 56 | 238 | 19.1 | 238 | 19.0 | **238** | **19.1** |
| 352.nab | 112 | 235 | 16.5 | **236** | **16.5** | 236 | 16.5 | 112 | **235** | **16.5** | 235 | 16.5 | 235 | 16.6 |
| 357.bt331 | 112 | **191** | **24.8** | 190 | 24.9 | 192 | 24.6 | 112 | 190 | 24.9 | **190** | **25.0** | 189 | 25.1 |
| 358.botsalgn | 112 | 245 | 17.8 | 245 | 17.8 | **245** | **17.8** | 112 | 245 | 17.8 | 245 | 17.8 | **245** | **17.8** |
| 359.botsspar | 112 | **433** | **12.1** | 433 | 12.1 | 433 | 12.1 | 56 | **55.8** | **94.2** | 55.2 | 95.1 | 55.8 | 94.0 |
| 360.ilbdc | 112 | **266** | **13.4** | 266 | 13.4 | 266 | 13.4 | 112 | 267 | 13.3 | 269 | 13.2 | **269** | **13.3** |
| 362.fma3d | 112 | 270 | 14.1 | **279** | **13.6** | 292 | 13.0 | 112 | **279** | **13.6** | 279 | 13.6 | 275 | 13.8 |
| 363.swim | 112 | 317 | 14.3 | **316** | **14.3** | 316 | 14.3 | 56 | **303** | **15.0** | 302 | 15.0 | 303 | 15.0 |
| 367.imagick | 112 | 298 | 23.6 | **298** | **23.6** | 297 | 23.6 | 56 | 217 | 32.5 | 216 | 32.6 | **217** | **32.5** |
| 370.mgrid331 | 112 | 339 | 13.0 | **339** | **13.0** | 339 | 13.0 | 56 | 326 | 13.5 | 327 | 13.5 | **327** | **13.5** |
| 371.applu331 | 112 | **156** | **38.9** | 159 | 38.2 | 155 | 39.2 | 112 | 149 | 40.6 | 152 | 39.7 | **151** | **40.1** |
| 372.smithwa | 112 | 151 | 35.5 | 150 | 35.8 | **150** | **35.7** | 56 | 124 | 43.1 | 124 | 43.1 | **124** | **43.1** |
| 376.kdtree | 112 | 248 | 18.2 | **247** | **18.2** | 247 | 18.2 | 112 | **247** | **18.2** | 248 | 18.1 | 247 | 18.2 |

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

## Platform Notes

```
Sysinfo program /nfs/pdx/home/aknyaze1/OMP2012/1.1/Docs/sysinfo
Revision 563 of 2016-06-10 (097295389cf6073d8c3b03fa376740a5)
running on ortce-skl3 Mon Jul 17 20:24:23 2017

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 8180 CPU @ 2.50GHz
      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:       196526484 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 7.2 (Maipo)

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.2 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.2"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

uname -a:
   Linux ortce-skl3 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT 2015
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 17 20:21

SPEC is set to: /nfs/pdx/home/aknyaze1/OMP2012/1.1
   Filesystem                              Type  Size  Used Avail Use% Mounted on
   cthor-fs1.jf.intel.com:/home/aknyaze1 nfs    19T   14T  4.4T  76%
   /nfs/pdx/home/aknyaze1

Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'

(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

================================================================================
Per benchmark peak OMP Library Settings

================================================================================
```

Continued on next page

## General Notes (Continued)

```
System settings notes:
  Intel Turbo Boost Technology (Turbo)  : Enabled

================================================================================
General OMP Library Settings
  KMP_LIBRARY=turnaround
  KMP_STACKSIZE=292M
  KMP_BLOCKTIME=infinite
  OMP_DYNAMIC=FALSE
  OMP_NESTED=FALSE
  OMP_SCHEDULE=static
================================================================================
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

================================================================================
372.smithwa:peak:
  ENV_KMP_AFFINITY=compact,1,verbose
```

## Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

## Base Portability Flags

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

## Base Optimization Flags

C benchmarks:
`-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -ansi-alias -no-prec-div -no-prec-sqrt`

C++ benchmarks:
`-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -ansi-alias -no-prec-div -no-prec-sqrt`

Fortran benchmarks:
`-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -ansi-alias -no-prec-div -no-prec-sqrt -align all`

## Peak Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

## Peak Portability Flags

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

## Peak Optimization Flags

C benchmarks:

Continued on next page

## Peak Optimization Flags (Continued)

352.nab: `-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt`

358.botsalgn: Same as 352.nab

359.botsspar: Same as 352.nab

367.imagick: `-O3 -qopenmp -xCORE-AVX2 -fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt`

372.smithwa: Same as 367.imagick

C++ benchmarks:
`-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt`

Fortran benchmarks:

350.md: `-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt -align all`

351.bwaves: `-O3 -qopenmp -xCORE-AVX2 -fp-model fast=2 -fno-alias -no-prec-div -no-prec-sqrt -align all`

357.bt331: Same as 350.md

360.ilbdc: `-O3 -qopenmp -xCORE-AVX512 -fp-model fast=2 -ansi-alias -no-prec-div -no-prec-sqrt -align all`

362.fma3d: Same as 350.md

363.swim: `-O3 -qopenmp -xCORE-AVX2 -fp-model fast=2 -no-prec-div -no-prec-sqrt -fno-alias -qopt-malloc-options=3 -align all`

370.mgrid331: Same as 363.swim

371.applu331: Same as 351.bwaves

The flags file that was used to format this result can be browsed at
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20170722.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20170722.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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