# SPEC® OMPG2012 Result



## Huawei

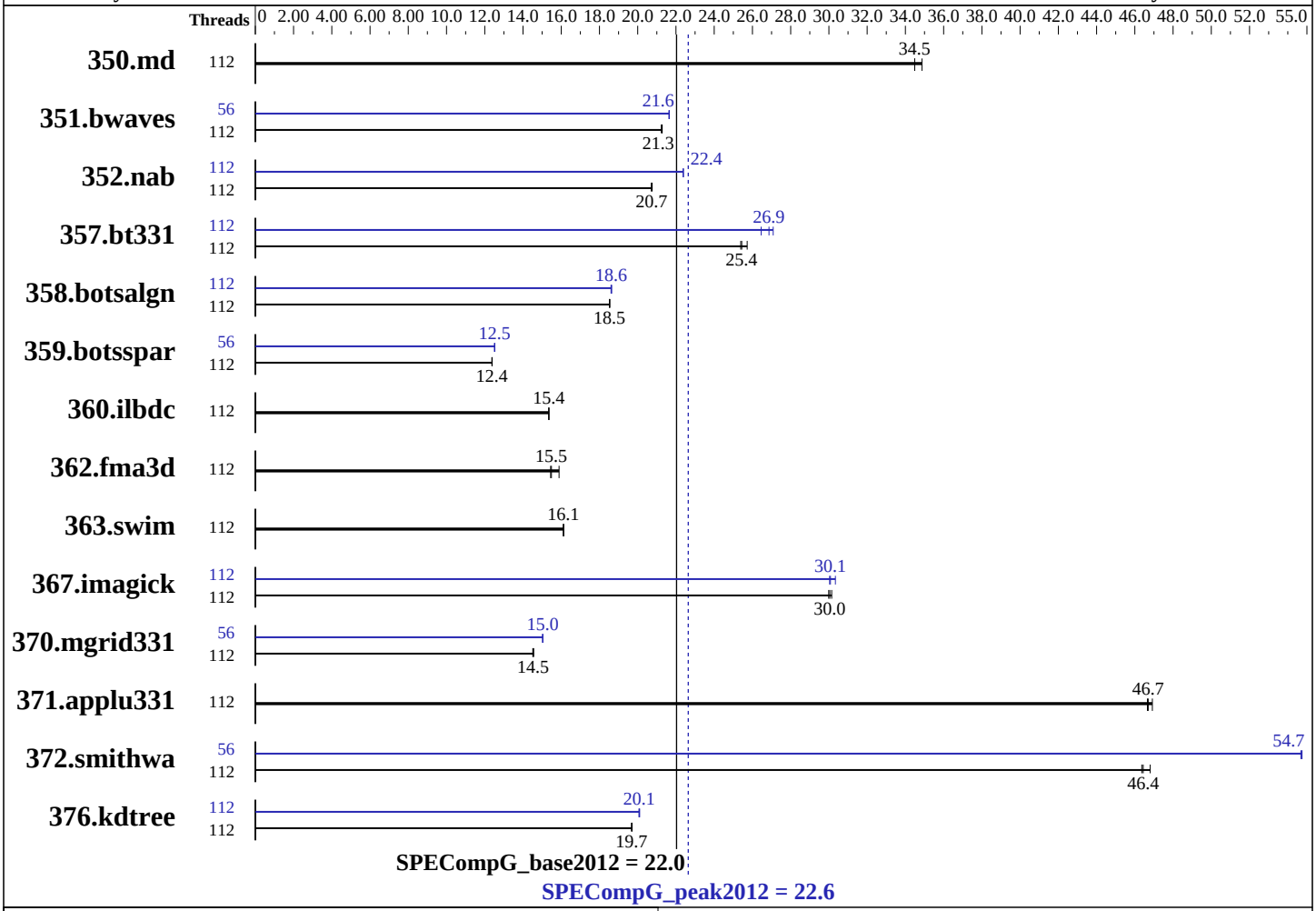
## Huawei 2288H V5 (Intel Xeon Platinum 8180)

SPECompG_peak2012 = 22.6

SPECompG_base2012 = 22.0

**OMP2012 license:** 27
**Test sponsor:** Huawei
**Tested by:** Huawei

**Test date:** Jun-2017
**Hardware Availability:** Jul-2017
**Software Availability:** Feb-2017




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon Platinum 8180 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.80 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: | 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R) |
| Disk Subsystem: | 1 X 1.2 TB SAS, 10000 RPM |
| Other Hardware: | None |
| Base Threads Run: | 112 |
| Minimum Peak Threads: | 56 |

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### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 12 SP2 linux-jm4z 4.4.21-69-default |
| Compiler: | C/C++/Fortran: Version 17.0.4.196 of Intel Composer XE for Linux Build 20170411 |
| Auto Parallel: | No |
| File System: | ext4 |
| System State: | run level 3 |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| Other Software: | None |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 350.md | 112 | 133 | 34.9 | **134** | **34.5** | 134 | 34.5 | 112 | 133 | 34.9 | **134** | **34.5** | 134 | 34.5 |
| 351.bwaves | 112 | **213** | **21.3** | 213 | 21.3 | 213 | 21.2 | 56 | **209** | **21.6** | 209 | 21.6 | 209 | 21.7 |
| 352.nab | 112 | 188 | 20.7 | **188** | **20.7** | 187 | 20.8 | 112 | **174** | **22.4** | 174 | 22.4 | 174 | 22.4 |
| 357.bt331 | 112 | 184 | 25.7 | 187 | 25.4 | **186** | **25.4** | 112 | 179 | 26.5 | 175 | 27.1 | **176** | **26.9** |
| 358.botsalgn | 112 | **235** | **18.5** | 235 | 18.5 | 235 | 18.5 | 112 | **234** | **18.6** | 233 | 18.6 | 234 | 18.6 |
| 359.botsspar | 112 | 424 | 12.4 | **424** | **12.4** | 424 | 12.4 | 56 | **419** | **12.5** | 419 | 12.5 | 420 | 12.5 |
| 360.ilbdc | 112 | 232 | 15.3 | 232 | 15.4 | **232** | **15.4** | 112 | 232 | 15.3 | 232 | 15.4 | **232** | **15.4** |
| 362.fma3d | 112 | 246 | 15.4 | 239 | 15.9 | **245** | **15.5** | 112 | 246 | 15.4 | 239 | 15.9 | **245** | **15.5** |
| 363.swim | 112 | 281 | 16.1 | **281** | **16.1** | 281 | 16.1 | 112 | 281 | 16.1 | **281** | **16.1** | 281 | 16.1 |
| 367.imagick | 112 | 233 | 30.1 | **234** | **30.0** | 234 | 30.0 | 112 | 234 | 30.0 | 232 | 30.3 | **234** | **30.1** |
| 370.mgrid331 | 112 | 304 | 14.6 | 305 | 14.5 | **304** | **14.5** | 56 | 294 | 15.0 | **294** | **15.0** | 294 | 15.0 |
| 371.applu331 | 112 | 129 | 46.9 | 130 | 46.7 | **130** | **46.7** | 112 | 129 | 46.9 | 130 | 46.7 | **130** | **46.7** |
| 372.smithwa | 112 | **115** | **46.4** | 115 | 46.8 | 116 | 46.4 | 56 | 97.9 | 54.7 | 98.0 | 54.7 | **97.9** | **54.7** |
| 376.kdtree | 112 | **229** | **19.7** | 228 | 19.7 | 229 | 19.7 | 112 | 224 | 20.1 | **224** | **20.1** | 224 | 20.1 |

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

## Platform Notes

```
Sysinfo program /specomp2012/Docs/sysinfo
$Rev: 395 $ $Date:: 2012-07-25 #$ 8f8c0fe9e19c658963a1e67685e50647
running on linux-jm4z Mon Jun 19 18:52:37 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:       394122080 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 2
      # This file is deprecated and will be removed in a future service pack or
      release.
      # Please check /etc/os-release for details about this release.
   os-release:
      NAME="SLES"
      VERSION="12-SP2"
      VERSION_ID="12.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
   Linux linux-jm4z 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
   (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 17 16:37

SPEC is set to: /specomp2012
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   828G   57G  772G   7% /

Additional information from dmidecode:
  BIOS INSYDE Corp. 0.10 03/09/2017
  Memory:
   24x Samsung M393A2K43BB1-CTD 16 GB 2666 MHz 2 rank

(End of data from sysinfo program)
```

## General Notes

```
------------------------------------------------------------------------
  Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
  BIOS settings notes:
  Power Policy set to Performance
  Set Patrol Scrub to Disable
  General OMP Library Settings
  ENV_KMP_LIBRARY=turnaround
  ENV_OMP_SCHEDULE=static
  ENV_KMP_STACKSIZE=256M
```

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## General Notes (Continued)

```
    ENV_OMP_DYNAMIC=FALSE
    ENV_OMP_NESTED=FALSE
    ENV_KMP_AFFINITY=compact,0
  ============================================================================
  Per benchmark peak OMP Library Settings

  ============================================================================
  351.bwaves:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=static,1
  ============================================================================
  357.bt331:peak
    ENV_OMP_SCHEDULE=static,1
  ============================================================================
  359.botsspar:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=guided

  ============================================================================
  370.mgrid331:peak
    ENV_KMP_AFFINITY=compact,1

  ============================================================================
  372.smithwa:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=static,1
```

## 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:
```
-O2 -openmp -ipo  -xCORE-AVX2 -ansi-alias
```

C++ benchmarks:
```
-O2 -openmp -ipo  -xCORE-AVX2 -ansi-alias
```

Fortran benchmarks:
```
-O2 -openmp -ipo  -xCORE-AVX2 -align array64byte
```

## 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:

352.nab: `-O3 -openmp -ipo  -xCORE-AVX2 -fno-alias -opt-malloc-options=1 -opt-calloc -fp-model fast=2 -no-prec-div -no-prec-sqrt -ansi-alias`

358.botsalgn: `-O3 -openmp -ipo  -xCORE-AVX2 -fno-alias -ansi-alias`

359.botsspar: `Same as 358.botsalgn`

367.imagick: `-O2 -openmp -ipo  -xCORE-AVX2 -ansi-alias`

372.smithwa: `-O2 -openmp -ipo  -xCORE-AVX2 -fno-alias -opt-streaming-stores always -opt-malloc-options=1 -ansi-alias`

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## Peak Optimization Flags (Continued)

C++ benchmarks:
`-O3 -openmp -ipo -xCORE-AVX2 -fno-alias -ansi-alias`

Fortran benchmarks:

350.md: `basepeak = yes`

351.bwaves: `-O3 -openmp -ipo -xCORE-AVX2 -fno-alias -fp-model fast=2 -no-prec-div -no-prec-sqrt -align array64byte`

357.bt331: `Same as 351.bwaves`

360.ilbdc: `basepeak = yes`

362.fma3d: `basepeak = yes`

363.swim: `basepeak = yes`

370.mgrid331: `-O2 -openmp -ipo -xCORE-AVX2 -fno-alias -opt-malloc-options=3 -align array64byte`

371.applu331: `basepeak = yes`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20161208.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20161208.xml`



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

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