# SPEC® OMPG2012 Result



## Huawei

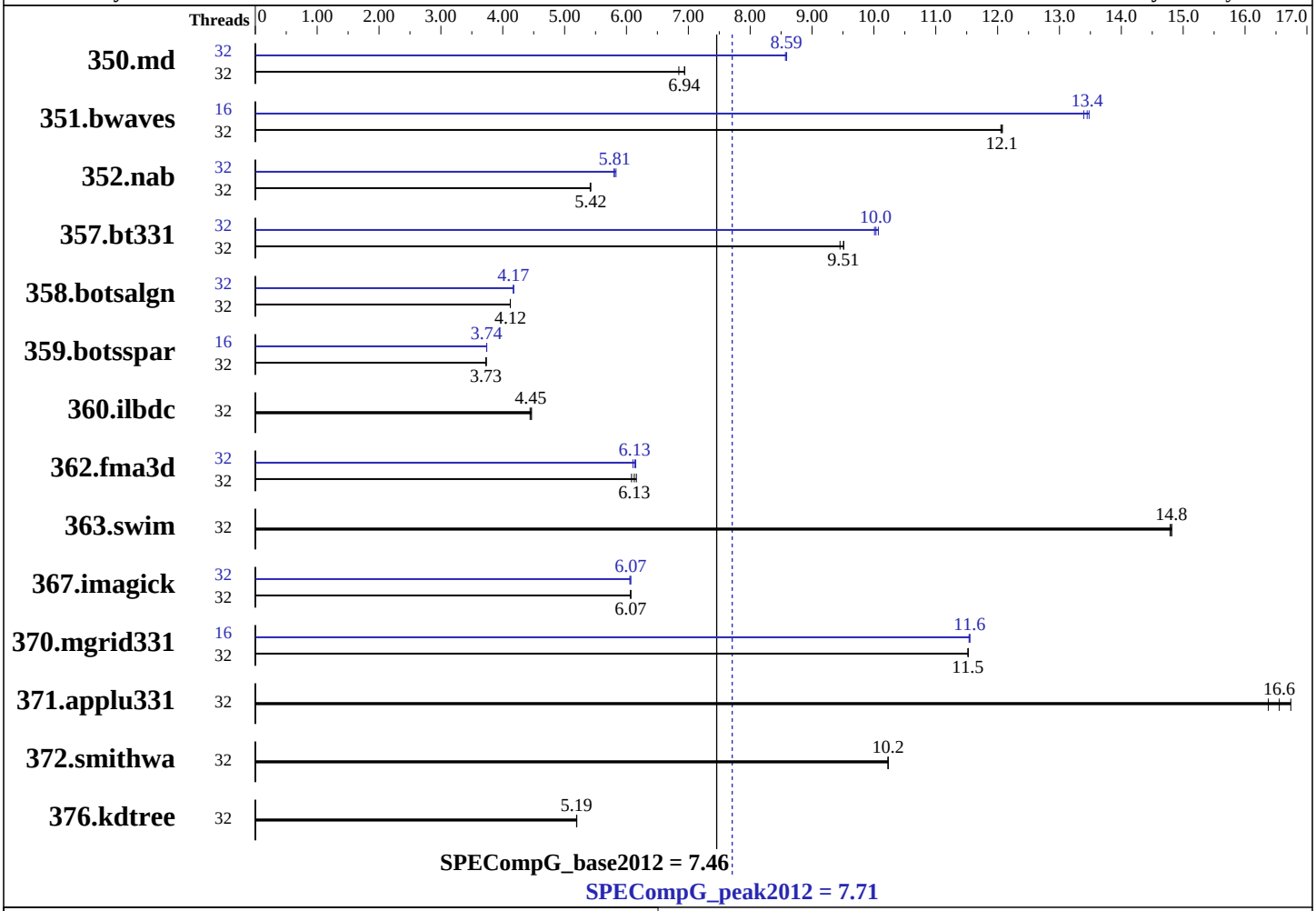
## Huawei RH5885H V3 (Intel Xeon E7-8893 v3)

**SPECompG_peak2012 = 7.71**

**SPECompG_base2012 = 7.46**

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

**Test date:** Feb-2017
**Hardware Availability:** May-2015
**Software Availability:** May-2016




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E7-8893 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.50 GHz |
| CPU MHz: | 3200 |
| CPU MHz Maximum: | 3500 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 4 chips, 4 cores/chip, 2 threads/core |
| CPU(s) orderable: | 2,4 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 45 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 512 GB (32 x 16 GB 2Rx8 PC4-2400T-R, running at 1600 MHz) |
| Disk Subsystem: | 2 x 600 GB SAS, 10K RPM |
| Other Hardware: | None |
| Base Threads Run: | 32 |

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### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 3.10.0-327.el7.x86_64<br>Red Hat Enterprise Linux Server release 7.2 (Maipo)<br>3.10.0-327.el7.x86_64 |
| Compiler: | C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux;<br>Fortran: Version 16.0.2.181 of Intel Fortran |
| Auto Parallel: | No |
| File System: | xfs |
| 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 | 32 | **667** | **6.94** | 667 | 6.94 | 676 | 6.85 | 32 | 540 | 8.57 | **539** | **8.59** | 539 | 8.59 |
| 351.bwaves | 32 | 376 | 12.1 | 375 | 12.1 | **375** | **12.1** | 16 | **337** | **13.4** | 336 | 13.5 | 338 | 13.4 |
| 352.nab | 32 | **718** | **5.42** | 718 | 5.42 | 719 | 5.41 | 32 | 671 | 5.80 | **670** | **5.81** | 667 | 5.83 |
| 357.bt331 | 32 | 501 | 9.45 | **499** | **9.51** | 498 | 9.51 | 32 | 474 | 10.0 | **472** | **10.0** | 471 | 10.1 |
| 358.botsalgn | 32 | **1055** | **4.12** | 1055 | 4.12 | 1055 | 4.12 | 32 | 1042 | 4.17 | **1042** | **4.17** | 1043 | 4.17 |
| 359.botsspar | 32 | **1408** | **3.73** | 1405 | 3.74 | 1409 | 3.73 | 16 | **1404** | **3.74** | 1403 | 3.74 | 1404 | 3.74 |
| 360.ilbdc | 32 | 801 | 4.44 | **799** | **4.45** | 797 | 4.47 | 32 | 801 | 4.44 | **799** | **4.45** | 797 | 4.47 |
| 362.fma3d | 32 | 625 | 6.08 | 617 | 6.16 | **620** | **6.13** | 32 | 623 | 6.10 | **620** | **6.13** | 618 | 6.15 |
| 363.swim | 32 | 306 | 14.8 | 306 | 14.8 | **306** | **14.8** | 32 | 306 | 14.8 | 306 | 14.8 | **306** | **14.8** |
| 367.imagick | 32 | **1159** | **6.07** | 1159 | 6.07 | 1158 | 6.07 | 32 | 1158 | 6.07 | **1159** | **6.07** | 1161 | 6.05 |
| 370.mgrid331 | 32 | 384 | 11.5 | **384** | **11.5** | 383 | 11.5 | 16 | 383 | 11.6 | 383 | 11.5 | **383** | **11.6** |
| 371.applu331 | 32 | 362 | 16.7 | **366** | **16.6** | 370 | 16.4 | 32 | 362 | 16.7 | **366** | **16.6** | 370 | 16.4 |
| 372.smithwa | 32 | 524 | 10.2 | 524 | 10.2 | **524** | **10.2** | 32 | 524 | 10.2 | 524 | 10.2 | **524** | **10.2** |
| 376.kdtree | 32 | **866** | **5.19** | 866 | 5.19 | 866 | 5.20 | 32 | **866** | **5.19** | 866 | 5.19 | 866 | 5.20 |

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

## Platform Notes

```
Sysinfo program /specomp/Docs/sysinfo
$Rev: 395 $ $Date:: 2012-07-25 #$ 8f8c0fe9e19c658963a1e67685e50647
running on localhost.localdomain Mon Feb 13 09:55:07 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) CPU E7-8893 v3 @ 3.20GHz
      4 "physical id"s (chips)
      32 "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 : 4
      siblings  : 8
      physical 0: cores 1 5 16 20
      physical 1: cores 1 5 16 20
      physical 2: cores 1 5 16 20
      physical 3: cores 1 5 16 20
   cache size : 46080 KB
```

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## Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:       528087168 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

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 localhost.localdomain 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 Feb 13 09:42

SPEC is set to: /specomp
   Filesystem            Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-root xfs    50G   27G   24G  54% /

Additional information from dmidecode:
  BIOS American Megatrends Inc. BLISV789 12/06/2016
  Memory:
   32x   16 GB
   64x NO DIMM NO DIMM
   32x Samsung M393A2K43BB1-CRC 16 GB 1600 MHz 2 rank

(End of data from sysinfo program)
```

## General Notes

```
------------------------------------------------------------------------
Power profile set with:
cpupower -c all frequency-set -g performance

System settings notes:
Intel Turbo Boost Technology (Turbo)  : Enabled
Memory RAS Configuration set to Maximum Performance

------------------------------------------------------------------------
General Notes and Enviroment variables
```

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## General Notes (Continued)

```
    ENV_KMP_AFFINITY=compact,1
    ENV_KMP_BLOCKTIME=infinite
    ENV_KMP_DETERMINISTIC_REDUCTION=1
    ENV_OMP_DYNAMIC=FALSE
    ENV_KMP_LIBRARY=turnaround
    ENV_KMP_SCHEDULE=static,balanced
    ENV_KMP_STACKSIZE=256M
    ENV_OMP_NESTED=FALSE
    ENV_OMP_NUM_THREADS=32

  ------------------------------------------------------------------------
  General base OMP Library Settings
    ENV_KMP_AFFINITY=compact,1

  ------------------------------------------------------------------------
  Base Optimization Flags
    372.smithwa:base:
      -mcmodel=medium

    376.kdtree:base:
      -mcmodel=medium

  ------------------------------------------------------------------------
  General peak OMP Library Settings
    ENV_KMP_AFFINITY=compact,1

  ------------------------------------------------------------------------
  Per benchmark peak OMP Library Settings

  ------------------------------------------------------------------------
  351.bwaves:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=static,1

  ------------------------------------------------------------------------
  359.botsspar:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=guided

  ------------------------------------------------------------------------
  363.swim:peak:
    ENV_KMP_AFFINITY=compact,1

  ------------------------------------------------------------------------
  372.smithwa:peak:
    ENV_OMP_SCHEDULE=static,1
```

## Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

## Base Portability Flags

350.md: -FR
367.imagick: -std=c99

## Base Optimization Flags

C benchmarks:
-O2 -openmp -ipo -xCORE-AVX2 -ansi-alias -mcmodel=medium
-shared-intel

C++ benchmarks:
-O2 -openmp -ipo -xCORE-AVX2 -ansi-alias -mcmodel=medium
-shared-intel

Fortran benchmarks:

350.md: -O2 -openmp -ipo -xCORE-AVX2 -align array64byte

351.bwaves: Same as 350.md

357.bt331: -O2 -openmp -ipo -xCORE-AVX2 -align array64byte
-mcmodel=medium(*)

360.ilbdc: Same as 350.md

362.fma3d: Same as 350.md

363.swim: Same as 357.bt331

370.mgrid331: Same as 350.md

371.applu331: Same as 350.md

(*) Indicates an optimization flag that was found in a portability variable.

## Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

## Peak Portability Flags

350.md: -FR
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: -O3 -openmp -ipo -xCORE-AVX2 -ansi-alias

372.smithwa: basepeak = yes

C++ benchmarks:

376.kdtree: basepeak = yes

Fortran benchmarks:

350.md: -O3 -openmp -ipo -xCORE-AVX2 -fno-alias
-opt-malloc-options=1 -fp-model fast=2 -no-prec-div
-no-prec-sqrt -align array64byte

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

357.bt331: -O3 -openmp -ipo -xCORE-AVX2 -fno-alias -fp-model fast=2
-no-prec-div -no-prec-sqrt -align array64byte
-mcmodel=medium(*)

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## Peak Optimization Flags (Continued)

360.ilbdc: `basepeak = yes`

362.fma3d: `-O3 -openmp -ipo -xCORE-AVX2 -fno-alias -align array64byte`

363.swim: `basepeak = yes`

370.mgrid331: `-O3 -openmp -ipo -xCORE-AVX2 -fno-alias -opt-malloc-options=3 -fp-model strict`

371.applu331: `basepeak = yes`

(*) Indicates an optimization flag that was found in a portability variable.

The flags file that was used to format this result can be browsed at
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20170317.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20170317.xml`



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

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