SPEC® OMPG2012 Result

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Huawei

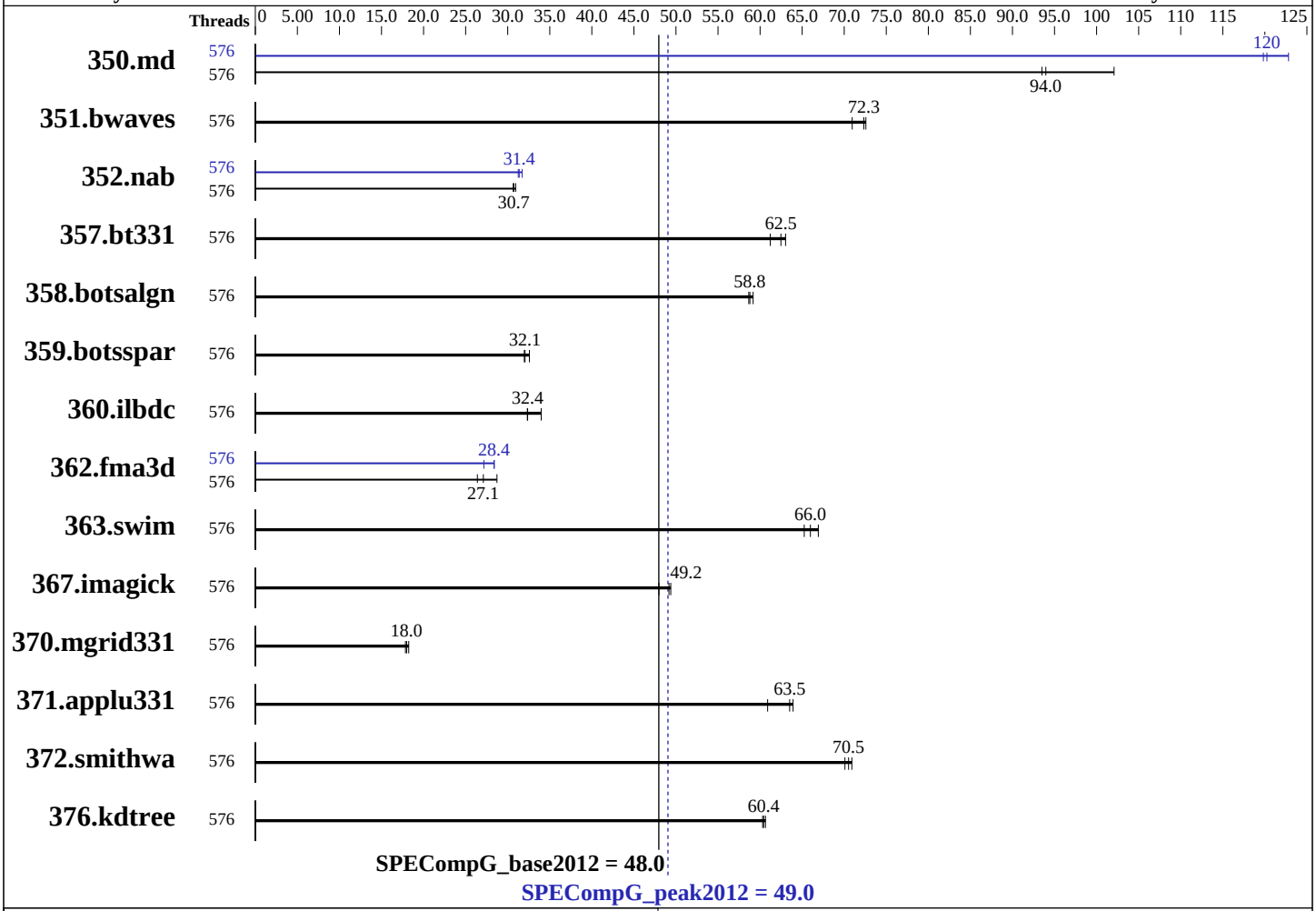
KunLun9016
(288 core, 2.50 GHz, Intel Xeon E7-8890 v3)

SPECompG_peak2012 = 49.0

SPECompG_base2012 = 48.0

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

Test date: Mar-2017
Hardware Availability: Jan-2016
Software Availability: Jul-2015



Hardware

CPU Name:	Intel Xeon E7-8890 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2500
CPU MHz Maximum:	3300
FPU:	Integrated
CPU(s) enabled:	288 cores, 16 chips, 18 cores/chip, 2 threads/core
CPU(s) orderable:	4, 8, 16 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:	2 TB (128 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:	576

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Software

Operating System:	Red Hat Enterprise Linux Server release 6.7 (Santiago) Linux rhel67 2.6.32-573.el6.x86_64
Compiler:	C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.2.181 of Intel Fortran
Auto Parallel:	No
File System:	ext4
System State:	Run level 3
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other Software:	None

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Minimum Peak Threads: 576
Maximum Peak Threads: 576

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	576	**49.3**	**94.0**	49.5	93.5	45.4	102	576	**38.5**	**120**	37.7	123	38.6	120
351.bwaves	576	63.8	70.9	**62.6**	**72.3**	62.4	72.6	576	63.8	70.9	**62.6**	**72.3**	62.4	72.6
352.nab	576	126	30.9	127	30.7	**127**	**30.7**	576	**124**	**31.4**	124	31.3	123	31.7
357.bt331	576	**75.9**	**62.5**	77.4	61.2	75.2	63.0	576	**75.9**	**62.5**	77.4	61.2	75.2	63.0
358.botsalgn	576	74.2	58.7	73.5	59.2	**74.0**	**58.8**	576	74.2	58.7	73.5	59.2	**74.0**	**58.8**
359.botsspar	576	161	32.6	164	32.0	**164**	**32.1**	576	161	32.6	164	32.0	**164**	**32.1**
360.ilbdc	576	105	34.0	**110**	**32.4**	110	32.3	576	105	34.0	**110**	**32.4**	110	32.3
362.fma3d	576	132	28.7	**140**	**27.1**	144	26.4	576	**134**	**28.4**	140	27.2	134	28.4
363.swim	576	69.4	65.2	**68.7**	**66.0**	67.7	66.9	576	69.4	65.2	**68.7**	**66.0**	67.7	66.9
367.imagick	576	147	48.0	**143**	**49.2**	142	49.4	576	147	48.0	**143**	**49.2**	142	49.4
370.mgrid331	576	242	18.2	**246**	**18.0**	248	17.8	576	242	18.2	**246**	**18.0**	248	17.8
371.applu331	576	**95.4**	**63.5**	99.5	60.9	94.8	63.9	576	**95.4**	**63.5**	99.5	60.9	94.8	63.9
372.smithwa	576	76.5	70.1	75.6	70.9	**76.0**	**70.5**	576	76.5	70.1	75.6	70.9	**76.0**	**70.5**
376.kdtree	576	74.2	60.6	74.6	60.3	**74.5**	**60.4**	576	74.2	60.6	74.6	60.3	**74.5**	**60.4**

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

Platform Notes

```
Sysinfo program /omp2012/Docs/sysinfo
$Rev: 395 $ $Date:: 2012-07-25 #$ 8f8c0fe9e19c658963a1e67685e50647
running on Kunlun Tue Mar 28 08:41:56 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 E7-8890 v3 @ 2.50GHz
      16 "physical id"s (chips)
      576 "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 : 18
      siblings  : 36
      physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 4: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
```

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Platform Notes (Continued)

```
        physical 5: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 6: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 7: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 8: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 9: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 10: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 11: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 12: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 13: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 14: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 15: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
     cache size : 46080 KB

  From /proc/meminfo
     MemTotal:       2116458496 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.7 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.7 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux Kunlun 2.6.32-573.el6.x86_64 #1 SMP Wed Jul 1 18:23:37 EDT 2015 x86_64
     x86_64 x86_64 GNU/Linux

  run-level 3 Mar 28 08:28

  SPEC is set to: /omp2012
     Filesystem           Type  Size  Used Avail Use% Mounted on
     /dev/mapper/vg_kunlun-lv_root
                          ext4   50G   21G   27G  44% /

  Additional information from dmidecode:
    BIOS American Megatrends Inc. 5.11 02/21/2017
    Memory:
     128x Micron 36ASF2G72PZ-2G1A2 16 GB 1600 MHz 2 rank
     256x NO DIMM NO DIMM

  (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
```

Continued on next page

General Notes (Continued)

```
================================================================================
General Notes and Enviroment variables
  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=576

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

================================================================================
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

================================================================================
357.bt331:peak:
  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
```

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Continued on next page

Base Compiler Invocation (Continued)

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 -shared-intel -ansi-alias

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

Fortran benchmarks:
-O2 -openmp -ipo -xCORE-AVX2 -shared-intel -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: `basepeak = yes`

359.botsspar: `basepeak = yes`

367.imagick: `basepeak = yes`

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: `basepeak = yes`

357.bt331: `basepeak = yes`

360.ilbdc: `basepeak = yes`

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

363.swim: `basepeak = yes`

370.mgrid331: `basepeak = yes`

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-linux64.20140219.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/omp2012/flags/Intel-ic13.0-linux64.20140219.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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