SPEC® OMPG2012 Result

Intel

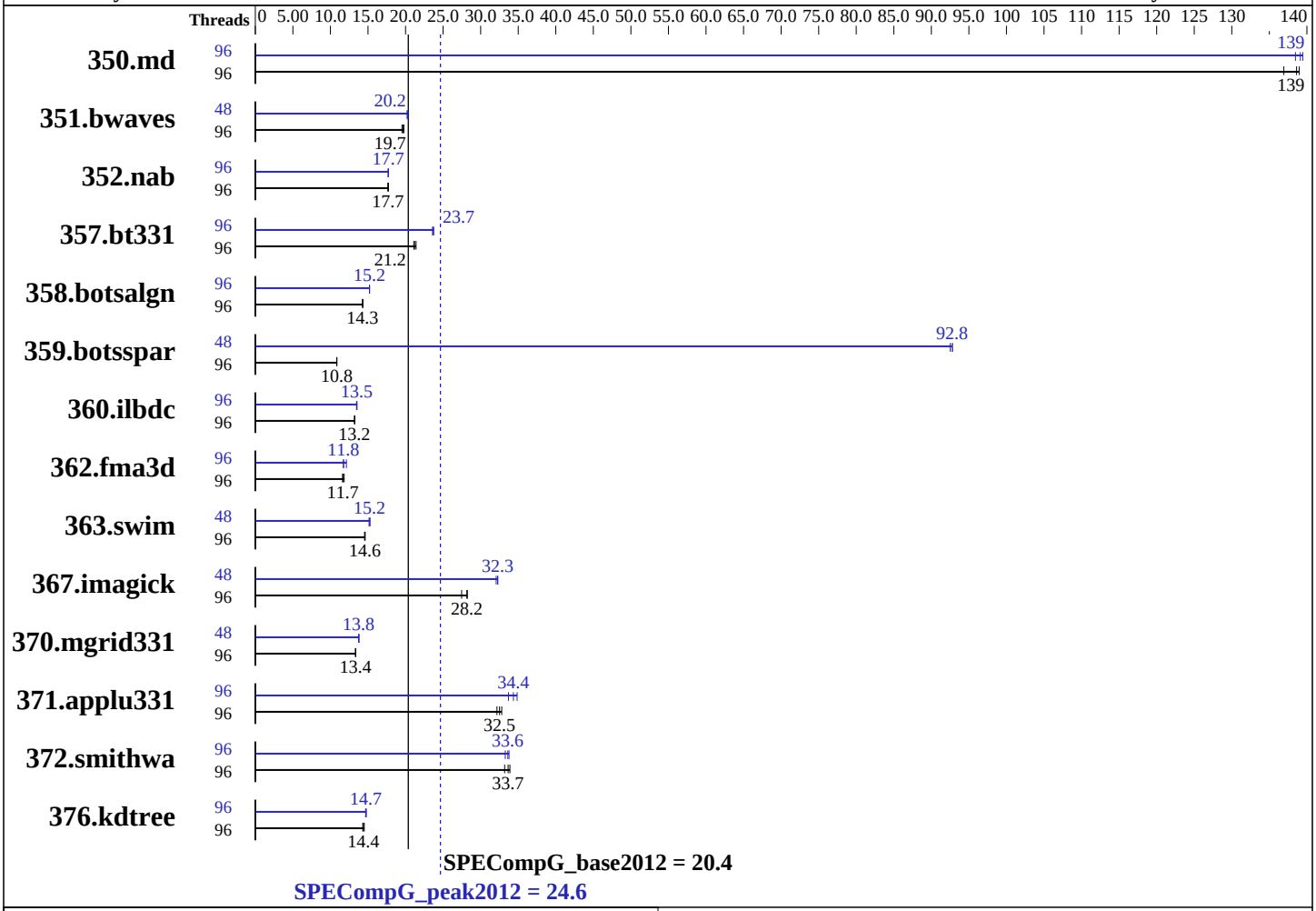
Intel Server System R2208WFTZS (2 x Intel Xeon Platinum 8260L, DDR4-2933, Turbo ON, SMT ON)

SPECompG_peak2012 = 24.6

SPECompG_base2012 = 20.4

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

Test date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Jan-2019



Hardware

CPU Name:	Intel Xeon Platinum 8260L
CPU Characteristics:	Turbo ON, SMT ON
CPU MHz:	2400
CPU MHz Maximum:	3900
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

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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

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	96	33.3	139	**33.4**	**139**	33.8	137	96	33.2	139	**33.3**	**139**	33.4	138
351.bwaves	96	232	19.5	229	19.8	**230**	**19.7**	48	224	20.2	**224**	**20.2**	223	20.4
352.nab	96	220	17.7	**220**	**17.7**	220	17.7	96	220	17.7	220	17.7	**220**	**17.7**
357.bt331	96	221	21.4	**224**	**21.2**	225	21.1	96	200	23.7	**200**	**23.7**	201	23.6
358.botsalgn	96	**304**	**14.3**	304	14.3	304	14.3	96	**286**	**15.2**	286	15.2	286	15.2
359.botsspar	96	**484**	**10.8**	483	10.9	485	10.8	48	**56.6**	**92.8**	56.8	92.5	56.6	92.8
360.ilbdc	96	270	13.2	269	13.2	**269**	**13.2**	96	263	13.5	264	13.5	**263**	**13.5**
362.fma3d	96	327	11.6	**326**	**11.7**	321	11.8	96	**323**	**11.8**	313	12.1	324	11.7
363.swim	96	**310**	**14.6**	310	14.6	311	14.5	48	297	15.3	**298**	**15.2**	299	15.1
367.imagick	96	249	28.2	256	27.5	**250**	**28.2**	48	**218**	**32.3**	218	32.3	219	32.1
370.mgrid331	96	331	13.4	331	13.3	**331**	**13.4**	48	321	13.8	321	13.8	**321**	**13.8**
371.applu331	96	188	32.2	**186**	**32.5**	185	32.8	96	174	34.9	**176**	**34.4**	180	33.7
372.smithwa	96	158	33.9	**159**	**33.7**	161	33.2	96	**159**	**33.6**	159	33.8	161	33.3
376.kdtree	96	**313**	**14.4**	315	14.3	310	14.5	96	306	14.7	**306**	**14.7**	304	14.8

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

Platform Notes

```
Sysinfo program /global/panfs02/innl/aknyaze1/OMP2012/1.1/Docs/sysinfo
Revision 563 of 2016-06-10 (097295389cf6073d8c3b03fa376740a5)
running on epb015 Mon Mar 18 00:32:01 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 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
   cache size : 36608 KB
```

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Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:       196678424 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 epb015 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 16 04:33

SPEC is set to: /global/panfs02/innl/aknyaze1/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)  : Enabled

    ================================================================================
    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: omp2012-20190326-00176.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
```

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 -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

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 -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: `Same as 352.nab`

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`

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

Tested with SPEC OMP2012 v1.1.
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