SPEC® OMPG2012 Result

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Intel

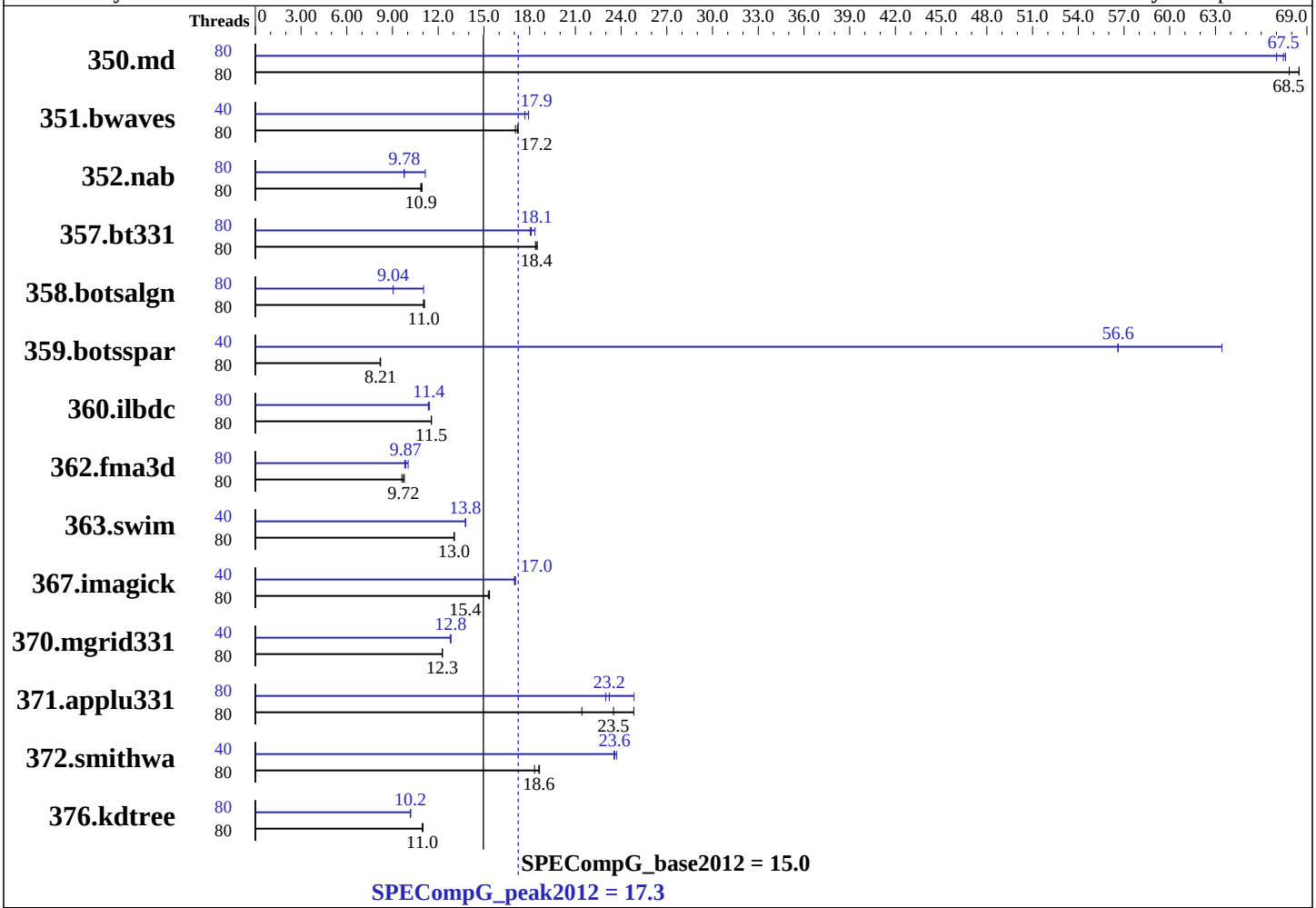
Intel Server System R2208WFTZS (Intel Xeon Gold 6148, DDR4-2666 Turbo OFF, SMT ON) Endeavour Node

SPECompG_peak2012 = 17.3

SPECompG_base2012 = 15.0

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 Gold 6148
CPU Characteristics:	Intel Turbo Boost Technology Disabled
CPU MHz:	2400
CPU MHz Maximum:	3700
FPU:	Integrated
CPU(s) enabled:	40 cores, 2 chips, 20 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:	27.5 MB I+D on chip per chip
Other Cache:	None
Memory:	192 GB (12 x 16 GB 2Rx4 DDR4-2666 ECC Registered)
Disk Subsystem:	Panasas ActiveStor 14 (Size 124TB)
Other Hardware:	--
Base Threads Run:	80
Minimum Peak Threads:	40

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Software

Operating System:	Oracle Linux Server release 7.3
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: 80

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	80	67.6	68.5	**67.6**	**68.5**	68.2	67.8	80	68.5	67.6	**68.6**	**67.5**	69.1	67.0
351.bwaves	80	263	17.2	**263**	**17.2**	265	17.1	40	256	17.7	253	17.9	**253**	**17.9**
352.nab	80	356	10.9	358	10.9	**358**	**10.9**	80	349	11.2	**398**	**9.78**	399	9.76
357.bt331	80	258	18.4	**257**	**18.4**	256	18.5	80	258	18.4	**262**	**18.1**	263	18.0
358.botsalgn	80	392	11.1	394	11.0	**394**	**11.0**	80	394	11.0	481	9.04	**481**	**9.04**
359.botsspar	80	639	8.22	641	8.19	**640**	**8.21**	40	82.8	63.4	92.8	56.6	**92.7**	**56.6**
360.ilbdc	80	**308**	**11.5**	308	11.6	308	11.5	80	**313**	**11.4**	311	11.4	314	11.4
362.fma3d	80	**391**	**9.72**	395	9.62	389	9.78	80	**385**	**9.87**	379	10.0	388	9.80
363.swim	80	347	13.0	**347**	**13.0**	347	13.1	40	329	13.8	**328**	**13.8**	328	13.8
367.imagick	80	**458**	**15.4**	458	15.4	460	15.3	40	**413**	**17.0**	412	17.1	414	17.0
370.mgrid331	80	361	12.3	360	12.3	**360**	**12.3**	40	346	12.8	**345**	**12.8**	344	12.8
371.applu331	80	244	24.8	283	21.4	**258**	**23.5**	80	264	23.0	**261**	**23.2**	244	24.9
372.smithwa	80	**288**	**18.6**	287	18.6	293	18.3	40	228	23.5	226	23.7	**227**	**23.6**
376.kdtree	80	**411**	**11.0**	409	11.0	411	11.0	80	442	10.2	442	10.2	**442**	**10.2**

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 epb331 Tue Jul  4 08:09:28 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) Gold 6148 CPU @ 2.40GHz
      2 "physical id"s (chips)
      80 "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 : 20
      siblings  : 40
      physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
      physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
   cache size : 28160 KB

From /proc/meminfo
   MemTotal:       196699188 kB
```

Continued on next page

Platform Notes (Continued)

```
      HugePages_Total:       0
      Hugepagesize:       2048 kB

   From /etc/*release* /etc/*version*
      oracle-release: Oracle Linux Server release 7.3
      os-release:
         NAME="Oracle Linux Server"
         VERSION="7.3"
         ID="ol"
         VERSION_ID="7.3"
         PRETTY_NAME="Oracle Linux Server 7.3"
         ANSI_COLOR="0;31"
         CPE_NAME="cpe:/o:oracle:linux:7:3:server"
         HOME_URL="https://linux.oracle.com/"
      redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
      system-release: Oracle Linux Server release 7.3
      system-release-cpe: cpe:/o:oracle:linux:7:3:server

   uname -a:
      Linux epb331 3.10.0-514.6.2.0.1.el7.x86_64.knl1 #1 SMP Thu Mar 2 10:19:17 MST
      2017 x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Jun 30 10:26

   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  108T   40T   69T  37% /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

```
   ------------------------------------------------------------------------
   Intel Turbo Boost Technology Disabled
   ------------------------------------------------------------------------
   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
```

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General Notes (Continued)

```
================================================================================
System settings notes:

================================================================================
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 -no-prec-div -no-prec-sqrt -fno-alias -qopt-malloc-options=1 -qopt-calloc`

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

359.botsspar: Same as 358.botsalgn

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 other inquiries, please contact webmaster@spec.org.

Tested with SPEC OMP2012 v1.1.
Report generated on Sat Jul 22 17:29:56 2017 by SPEC OMP2012 PS/PDF formatter v541.
Originally published on 22 July 2017.