SPEC® OMPG2012 Result

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Intel

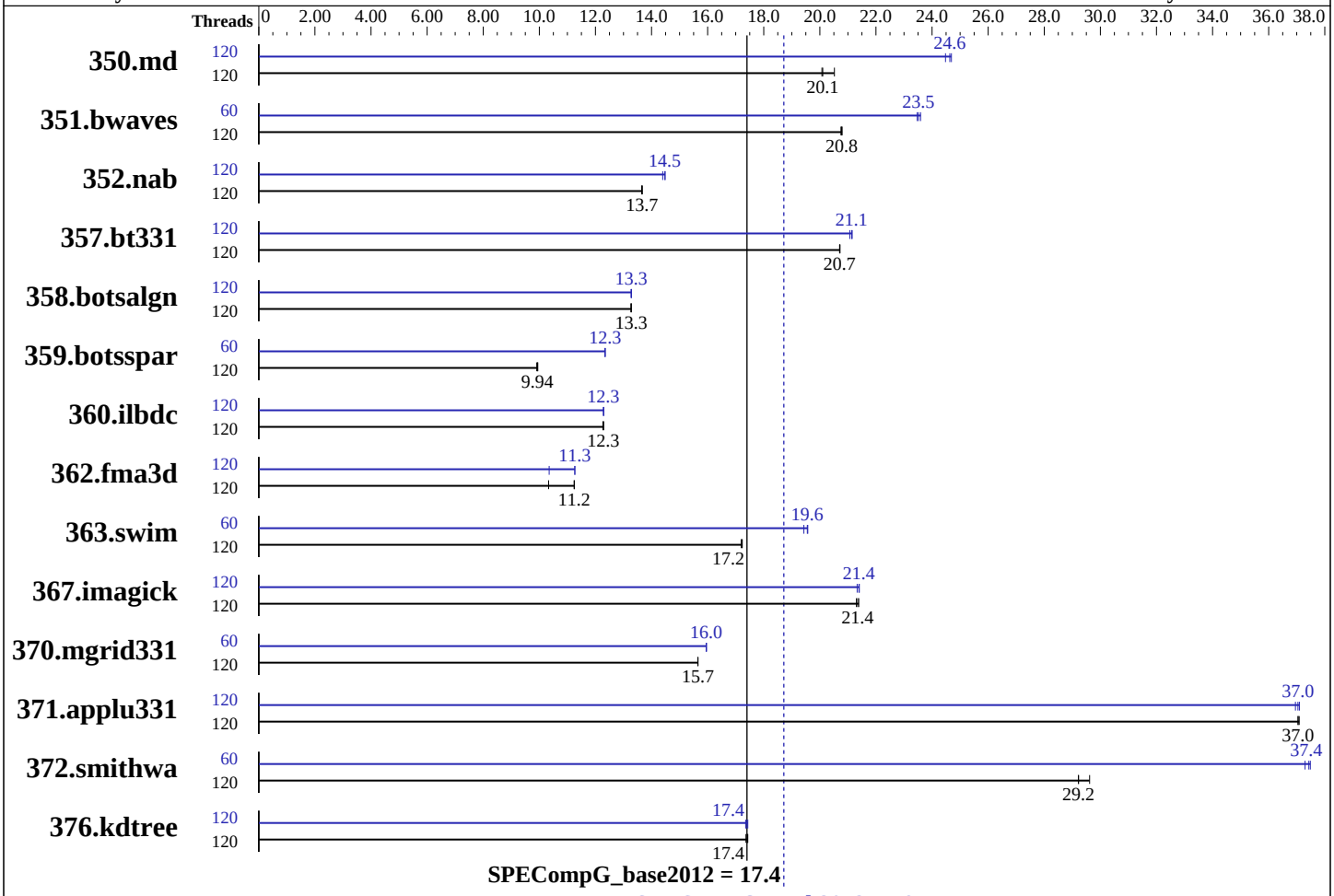
S4TR1SY4Q (Intel Xeon E7-4890 v2)

SPECompG_peak2012 = 18.7

SPECompG_base2012 = 17.4

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

Test date: Feb-2014
Hardware Availability: Feb-2014
Software Availability: Jun-2013



Hardware

CPU Name:	Intel Xeon E7-4890 v2
CPU Characteristics:	
CPU MHz:	2800
CPU MHz Maximum:	3400
FPU:	Integrated
CPU(s) enabled:	60 cores, 4 chips, 15 cores/chip, 2 threads/core
CPU(s) orderable:	1,2,3,4 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:	38400 KB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (32 x 16 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	Panasas ActiveStor 14
Other Hardware:	--
Base Threads Run:	120
Minimum Peak Threads:	60

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Software

Operating System:	Red Hat Enterprise Linux Server release 6.4
Compiler:	C/C++/Fortran: Version 13.1.3 of Intel Composer XE for Linux Build 20130607
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: 120

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	120	231	20.1	**230**	**20.1**	226	20.5	120	**188**	**24.6**	189	24.5	188	24.7
351.bwaves	120	**218**	**20.8**	218	20.8	218	20.8	60	193	23.5	**193**	**23.5**	192	23.6
352.nab	120	**285**	**13.7**	285	13.7	285	13.6	120	270	14.4	**269**	**14.5**	269	14.5
357.bt331	120	229	20.7	229	20.7	**229**	**20.7**	120	224	21.2	225	21.1	**224**	**21.1**
358.botsalgn	120	**328**	**13.3**	328	13.3	328	13.3	120	328	13.3	327	13.3	**328**	**13.3**
359.botsspar	120	528	9.95	530	9.91	**528**	**9.94**	60	425	12.3	425	12.3	**425**	**12.3**
360.ilbdc	120	290	12.3	**290**	**12.3**	290	12.3	120	290	12.3	**290**	**12.3**	290	12.3
362.fma3d	120	**338**	**11.2**	338	11.2	368	10.3	120	367	10.4	**337**	**11.3**	337	11.3
363.swim	120	**263**	**17.2**	263	17.2	263	17.2	60	**232**	**19.6**	231	19.6	233	19.4
367.imagick	120	329	21.4	**329**	**21.4**	330	21.3	120	330	21.3	**329**	**21.4**	328	21.4
370.mgrid331	120	282	15.7	282	15.7	**282**	**15.7**	60	277	16.0	277	15.9	**277**	**16.0**
371.applu331	120	164	37.0	163	37.1	**164**	**37.0**	120	**164**	**37.0**	164	37.0	163	37.1
372.smithwa	120	**183**	**29.2**	183	29.2	181	29.6	60	**143**	**37.4**	144	37.3	143	37.5
376.kdtree	120	258	17.4	259	17.4	**258**	**17.4**	120	258	17.4	**259**	**17.4**	259	17.4

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

Platform Notes

```
Sysinfo program /panfs/projects/innl/aknyaze1/OMP2012/1.0/Docs/sysinfo
$Rev: 395 $ $Date:: 2012-07-25 #$ 8f8c0fe9e19c658963a1e67685e50647
running on eix05 Mon Feb  3 14:08:28 2014

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 E7-4890 v2 @ 2.80GHz
      4 "physical id"s (chips)
      120 "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 : 15
      siblings  : 30
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
   cache size : 38400 KB
```

Continued on next page

Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:       529160992 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux eix05 2.6.32-358.6.2.el6.x86_64.crt1 #4 SMP Fri May 17 15:33:33 MDT
   2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 27 20:46

SPEC is set to: /panfs/projects/innl/aknyaze1/OMP2012/1.0
   Filesystem     Type    Size  Used Avail Use% Mounted on
   panfs://36.101.211.1/projects
                  panfs     28T   18T  9.7T  65% /panfs/projects

Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'

(End of data from sysinfo program)
```

General Notes

```
------------------------------------------------------------------------
BIOS settings: Default
  Intel Turbo Boost Technology (Turbo)  : Enabled
 Transparent Huge Pages Disabled via "echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled"

------------------------------------------------------------------------
General OMP Library Settings
  ENV_KMP_LIBRARY=throughput
  ENV_KMP_STACKSIZE=190M
  ENV_KMP_BLOCKTIME=infinite
  ENV_OMP_DYNAMIC=FALSE
  ENV_OMP_NESTED=FALSE
  ENV_OMP_SCHEDULE=static

------------------------------------------------------------------------
General base OMP Library Settings
  ENV_KMP_AFFINITY=compact,0,granularity=fine

------------------------------------------------------------------------
General peak OMP Library Settings
  ENV_KMP_AFFINITY=compact,0,granularity=fine
```

Continued on next page

General Notes (Continued)

```
================================================================================
Per benchmark peak OMP Library Settings

================================================================================
351.bwaves:peak:
  ENV_KMP_AFFINITY=compact,1,granularity=fine
  ENV_OMP_SCHEDULE=static,1
================================================================================
357.bt331:peak:
  ENV_OMP_SCHEDULE=static,1

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

================================================================================
362.fma3d:peak:
  ENV_OMP_SCHEDULE=static,1

================================================================================
363.swim:peak:
  ENV_KMP_AFFINITY=compact,1,granularity=fine

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

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

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 -xAVX -ansi-alias`

C++ benchmarks:
`-O2 -openmp -ipo -xAVX -ansi-alias`

Fortran benchmarks:
`-O2 -openmp -ipo -xAVX -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 -xAVX -fno-alias -opt-malloc-options=1 -opt-calloc -fp-model fast=2 -no-prec-div -no-prec-sqrt -ansi-alias`

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Peak Optimization Flags (Continued)

358.botsalgn: `-O2 -openmp -ipo -xAVX -ansi-alias`

359.botsspar: `-O3 -openmp -ipo -xAVX -fno-alias -ansi-alias`

367.imagick: `Same as 358.botsalgn`

372.smithwa: `-O2 -openmp -ipo -xSSE4.2 -fno-alias -opt-streaming-stores always -opt-malloc-options=1 -ansi-alias`

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

Fortran benchmarks:

350.md: `-O2 -openmp -ipo -xAVX -fno-alias -opt-malloc-options=1 -fp-model fast=2 -no-prec-div -no-prec-sqrt -align array64byte`

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

357.bt331: `Same as 351.bwaves`

360.ilbdc: `-O3 -openmp -ipo -xAVX -opt-malloc-options=1 -align array64byte`

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

363.swim: `-O3 -openmp -ipo -xSSE4.2 -fno-alias -opt-streaming-stores always -opt-malloc-options=3 -align array64byte`

370.mgrid331: `-O2 -openmp -ipo -xSSE4.2 -fno-alias -opt-malloc-options=3 -align array64byte`

371.applu331: `-O2 -openmp -ipo -xAVX -align array64byte`

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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