SPEC® OMPG2012 Result

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Hewlett-Packard Company

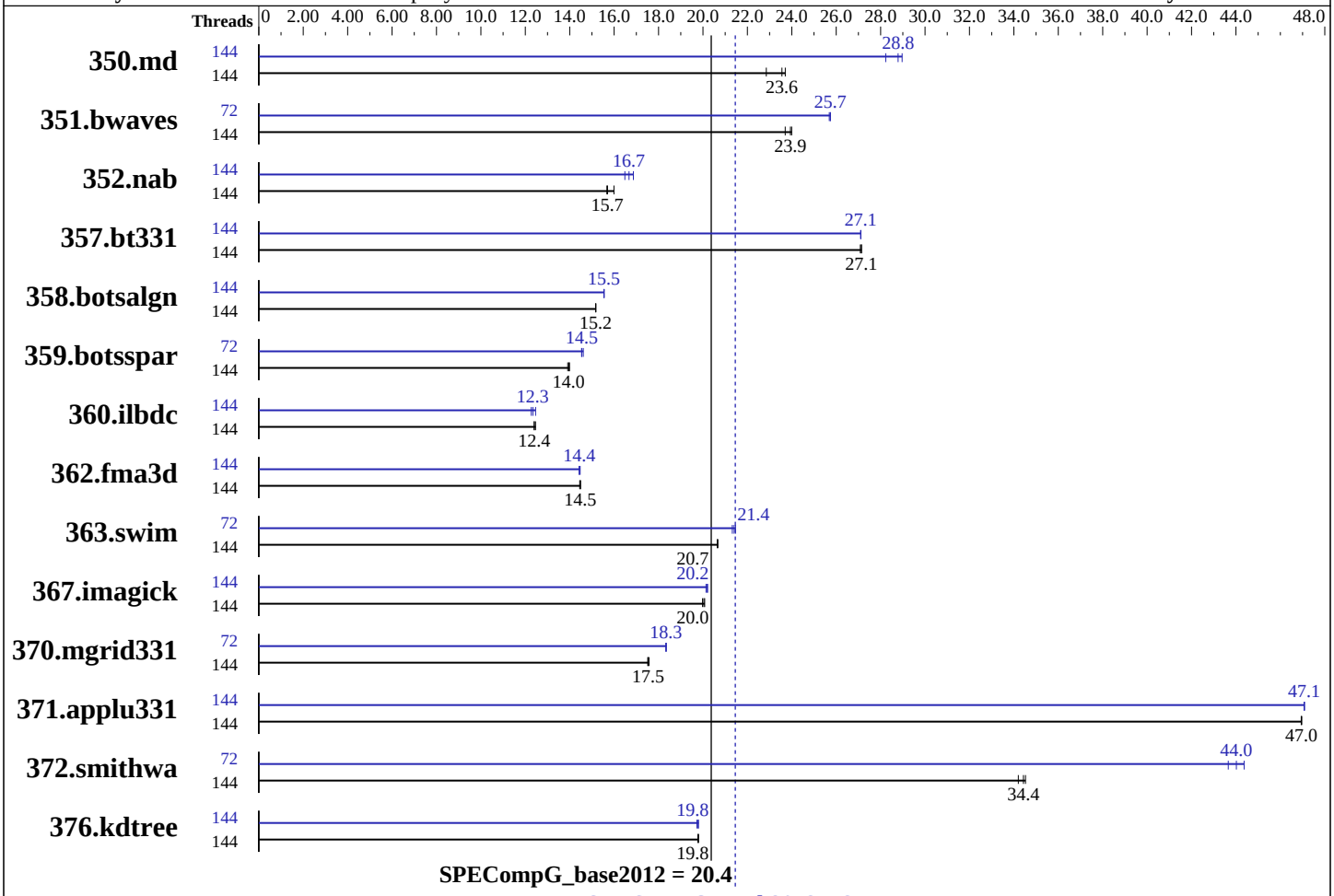
HP ProLiant DL580 Gen9
(Intel Xeon E7-8890 v3 @ 2.50)

SPECompG_peak2012 = 21.5

SPECompG_base2012 = 20.4

OMP2012 license: 1
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Apr-2015
Hardware Availability: May-2015
Software Availability: Jan-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:	72 cores, 4 chips, 18 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:	1.00 TB (64 x 16 GB 2Rx4 PC4-2133P-R, ECC)
Disk Subsystem:	1 X 300GB SAS, 10K RPM
Other Hardware:	None
Base Threads Run:	144
Minimum Peak Threads:	72

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Software

Operating System:	SUSE Linux Enterprise Server 11 SP3 (x86_64) Kernel 3.0.76-0.11-default
Compiler:	C/C++/Fortran: Version 15.0.2.0 of Intel Composer XE for Linux, Build 20150121
Auto Parallel:	No
File System:	ext3
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other Software:	None

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Maximum Peak Threads: 144

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	144	203	22.9	195	23.7	**197**	**23.6**	144	160	29.0	164	28.2	**161**	**28.8**
351.bwaves	144	**189**	**23.9**	189	24.0	191	23.7	72	**176**	**25.7**	176	25.7	176	25.7
352.nab	144	243	16.0	248	15.7	**248**	**15.7**	144	**233**	**16.7**	231	16.9	236	16.5
357.bt331	144	175	27.1	**175**	**27.1**	175	27.1	144	175	27.1	**175**	**27.1**	175	27.1
358.botsalgn	144	287	15.2	287	15.2	**287**	**15.2**	144	280	15.5	280	15.5	**280**	**15.5**
359.botsspar	144	**376**	**14.0**	377	13.9	375	14.0	72	359	14.6	**361**	**14.5**	361	14.5
360.ilbdc	144	287	12.4	**287**	**12.4**	286	12.5	144	**288**	**12.3**	290	12.3	286	12.5
362.fma3d	144	**263**	**14.5**	263	14.5	262	14.5	144	263	14.4	**263**	**14.4**	263	14.5
363.swim	144	219	20.7	**219**	**20.7**	219	20.6	72	**212**	**21.4**	211	21.5	212	21.3
367.imagick	144	**351**	**20.0**	352	20.0	350	20.1	144	348	20.2	**348**	**20.2**	349	20.1
370.mgrid331	144	251	17.6	**252**	**17.5**	252	17.5	72	**241**	**18.3**	241	18.3	241	18.3
371.applu331	144	129	47.0	**129**	**47.0**	129	46.9	144	129	47.1	**129**	**47.1**	129	47.1
372.smithwa	144	157	34.2	**156**	**34.4**	155	34.5	72	**122**	**44.0**	123	43.7	121	44.4
376.kdtree	144	227	19.8	**227**	**19.8**	228	19.8	144	227	19.8	228	19.7	**227**	**19.8**

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

Platform Notes

```
Sysinfo program /opt/omp2012/Docs/sysinfo
$Rev: 395 $ $Date:: 2012-07-25 #$ 8f8c0fe9e19c658963a1e67685e50647
running on DL580Gen9-6 Mon Apr 20 02:42:02 2015

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
      4 "physical id"s (chips)
      144 "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
   cache size : 46080 KB
```

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Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:       1058712696 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 3

uname -a:
   Linux DL580Gen9-6 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013
   (ccab990) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 20 02:25 last=S

SPEC is set to: /opt/omp2012
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda3      ext3  273G   41G  232G  15% /

Additional information from dmidecode:
  BIOS HP U17 03/13/2015
  Memory:
   64x HP 752369-081 16 GB 1600 MHz
   32x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
```

General Notes

```
------------------------------------------------------------------------
Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/transparent_hugepage/enabled
Software Environment:
  ulimit -s unlimited
BIOS settings notes:
  Power Profile = Maximum Performance
  Thermal Configuration = Maximum Cooling
  Collaborative Power Control = Disabled
  Processor Power and Utilization Monitoring = Disabled
  Memory Refresh Rate = 1x
------------------------------------------------------------------------
General OMP Library Settings
  ENV_KMP_LIBRARY=turnaround
  ENV_KMP_STACKSIZE=2220M
  ENV_KMP_BLOCKTIME=infinite
  ENV_OMP_DYNAMIC=FALSE
```

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General Notes (Continued)

```
    ENV_OMP_NESTED=FALSE
    ENV_OMP_WAIT_POLICY=ACTIVE
  ------------------------------------------------------------------------
  General base OMP Library Settings
    ENV_KMP_AFFINITY=compact,0

  ------------------------------------------------------------------------
  General peak OMP Library Settings
    ENV_KMP_AFFINITY=compact,0

  ------------------------------------------------------------------------
  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

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

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

  ------------------------------------------------------------------------
  370.mgrid331:peak:
    ENV_KMP_AFFINITY=compact,1

  ------------------------------------------------------------------------
  372.smithwa:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=guided
```

Base Compiler Invocation

C benchmarks:
icc

Continued on next page

Base Compiler Invocation (Continued)

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 -openmp -ipo -xAVX -ansi-alias

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

Fortran benchmarks:
-O3 -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`

358.botsalgn: `-O3 -openmp -ipo -xSSE4.2 -fno-alias -ansi-alias`

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

367.imagick: `-O2 -openmp -ipo -xAVX -ansi-alias`

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/hp-ic15.0-linux64.v1.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/omp2012/flags/hp-ic15.0-linux64.v1.xml`

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For other inquiries, please contact webmaster@spec.org.

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