SPEC® OMPG2012 Result

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Cisco Systems

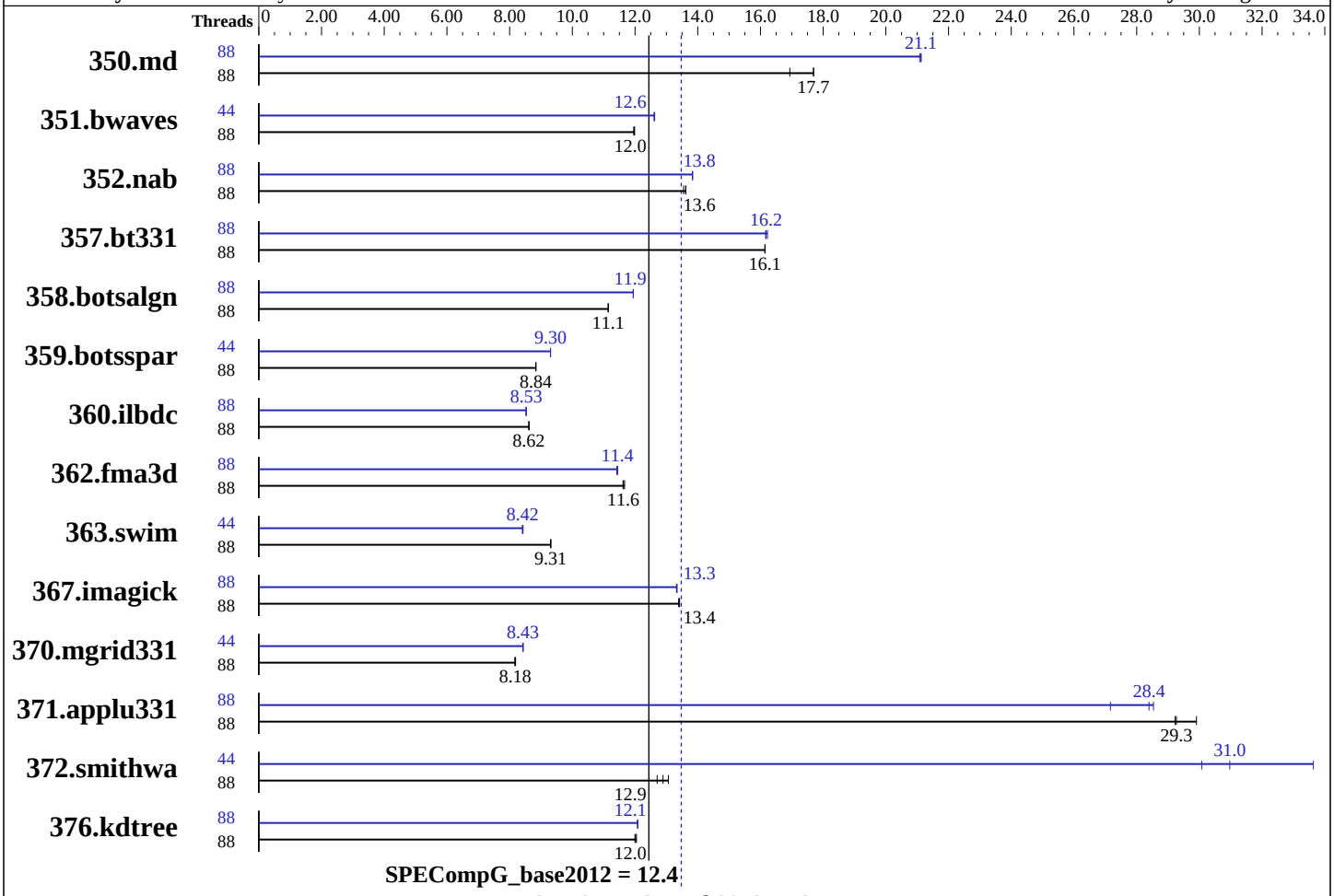
Cisco UCS B200 M4 (Intel Xeon E5-2699 v4, 2.20 GHz)

SPECompG_peak2012 = 13.5

SPECompG_base2012 = 12.4

OMP2012 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Test date: Mar-2016
Hardware Availability: Mar-2016
Software Availability: Aug-2015



Hardware

CPU Name:	Intel Xeon E5-2699 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	2200
CPU MHz Maximum:	3600
FPU:	Integrated
CPU(s) enabled:	44 cores, 2 chips, 22 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:	256 KB I+D on chip per core
L3 Cache:	55 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem:	1 X 1.2 TB SAS, 10K RPM
Other Hardware:	None
Base Threads Run:	88
Minimum Peak Threads:	44

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux 6.7 (Santiago), Kernel 2.6.32-573.el6.x86_64
Compiler:	C/C++/Fortran: Version 16.0.0.109 of Intel Composer for Linux Build 20150815
Auto Parallel:	No
File System:	Linux ext4
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other Software:	None

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Maximum Peak Threads: 88

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	88	**262**	**17.7**	273	16.9	262	17.7	88	**219**	**21.1**	220	21.1	219	21.1
351.bwaves	88	378	12.0	379	12.0	**378**	**12.0**	44	359	12.6	359	12.6	**359**	**12.6**
352.nab	88	286	13.6	287	13.5	**286**	**13.6**	88	281	13.8	281	13.8	**281**	**13.8**
357.bt331	88	293	16.2	294	16.1	**294**	**16.1**	88	292	16.2	**293**	**16.2**	293	16.2
358.botsalgn	88	**390**	**11.1**	390	11.1	390	11.1	88	**364**	**11.9**	364	11.9	364	11.9
359.botsspar	88	594	8.83	**594**	**8.84**	594	8.84	44	564	9.31	**564**	**9.30**	564	9.30
360.ilbdc	88	413	8.62	**413**	**8.62**	413	8.61	88	418	8.52	**417**	**8.53**	417	8.53
362.fma3d	88	327	11.6	326	11.7	**327**	**11.6**	88	333	11.4	332	11.4	**332**	**11.4**
363.swim	88	486	9.31	487	9.31	**487**	**9.31**	44	**538**	**8.42**	537	8.43	539	8.41
367.imagick	88	**525**	**13.4**	524	13.4	525	13.4	88	527	13.3	528	13.3	**527**	**13.3**
370.mgrid331	88	541	8.17	**540**	**8.18**	540	8.19	44	524	8.43	**524**	**8.43**	525	8.42
371.applu331	88	203	29.9	**207**	**29.3**	207	29.2	88	223	27.2	**213**	**28.4**	212	28.5
372.smithwa	88	422	12.7	410	13.1	**416**	**12.9**	44	159	33.6	178	30.1	**173**	**31.0**
376.kdtree	88	**374**	**12.0**	374	12.0	375	12.0	88	372	12.1	372	12.1	**372**	**12.1**

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 rhel Fri Mar 11 21:00:49 2016

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 E5-2699 v4 @ 2.20GHz
      2 "physical id"s (chips)
      88 "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 : 22
      siblings  : 44
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
      28
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
      28
   cache size : 56320 KB
```

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Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:       264250764 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.7 (Santiago)

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 rhel 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 11 20:27

SPEC is set to: /opt/omp2012
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      ext4  1.1T   30G 1015G   3% /

Additional information from dmidecode:
  BIOS Cisco Systems, Inc. B200M4.3.1.2a.0.022620161405 02/26/2016
  Memory:
   8x 0xCE00 M393A2G40DB1-CRC 16 GB 2400 MHz 2 rank
   8x 0xCE00 M393A2G40EB1-CRC 16 GB 2400 MHz 2 rank
   8x NO DIMM NO DIMM

(End of data from sysinfo program)
```

General Notes

```
------------------------------------------------------------------------
  Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
BIOS settings notes:
  Intel Turbo Boost Technology (Turbo)  : Enabled
  CPU performance set to Enterprise
  Processor Power State set to C0/C1
  Power Technology set to Performance
  Memory RAS configuration set to Maximum Performance
  Energy Performance BIAS setting set to OS
  Memory Power Saving Mode set to Disabled
  QPI Snoop Mode set to Home Snoop
General OMP Library Settings
  ENV_KMP_LIBRARY=turnaround
  ENV_OMP_SCHEDULE=static
  ENV_KMP_BLOCKTIME=200
  ENV_KMP_STACKSIZE=8192M
```

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General Notes (Continued)

```
    ENV_OMP_DYNAMIC=FALSE
    ENV_OMP_NESTED=FALSE

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

  ------------------------------------------------------------------------
  362.fma3d:peak:
    ENV_KMP_AFFINITY=compact,1
    ENV_OMP_SCHEDULE=guided

  ------------------------------------------------------------------------
    ENV_OMP_SCHEDULE=static,1

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

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

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 -xCORE-AVX2 -ansi-alias`

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

Fortran benchmarks:
`-O2 -openmp -ipo -xCORE-AVX2 -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: `-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/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 other inquiries, please contact webmaster@spec.org.

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