



# 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

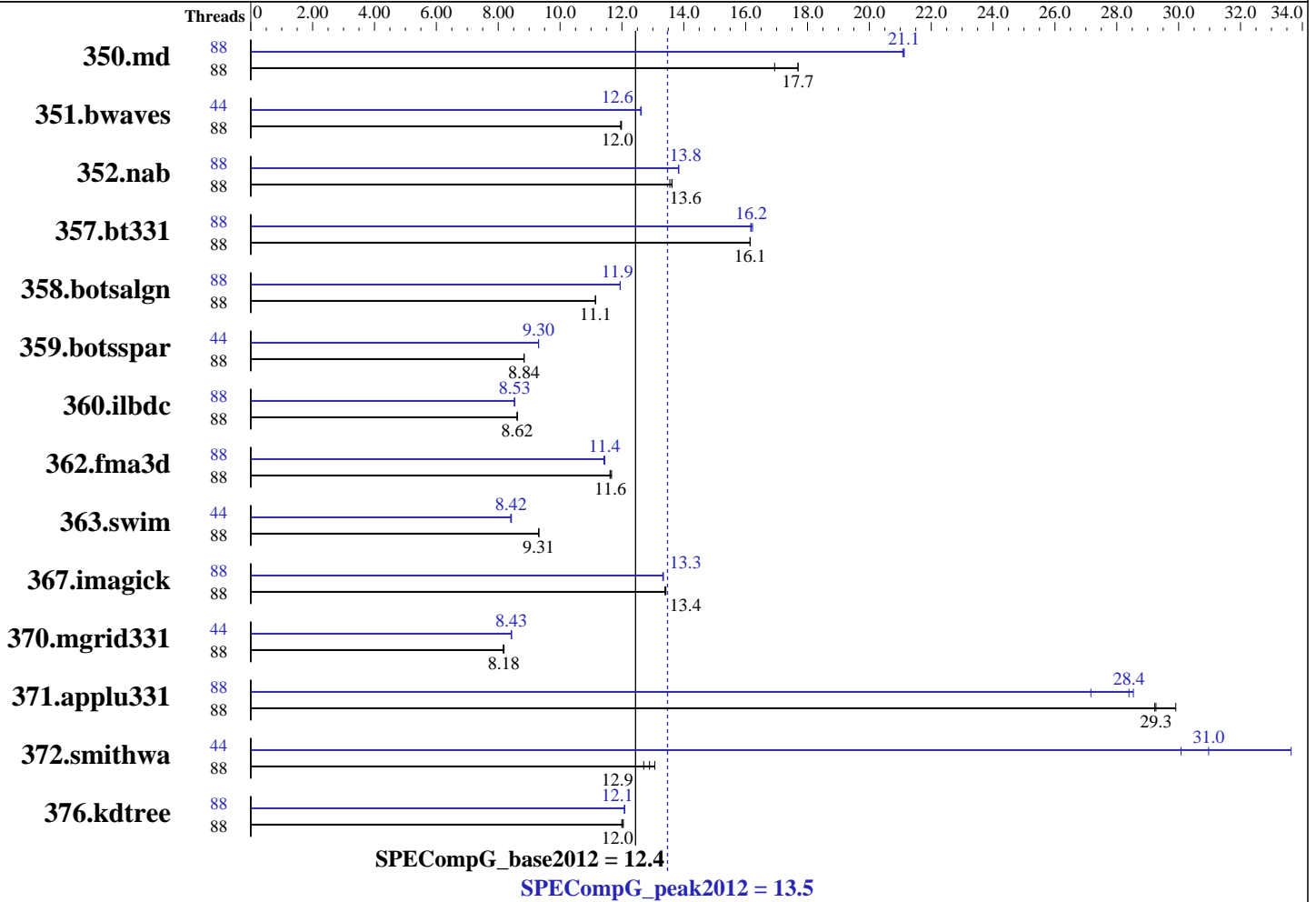
Test sponsor: Cisco Systems

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

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

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/sdal       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



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## 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](mailto:webmaster@spec.org).

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