



# SPEC® OMPG2012 Result

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## Cisco Systems

SPECompG\_peak2012 = 64.2

Cisco UCS C245 M8 (AMD EPYC 9754, 2.25GHz)

SPECompG\_base2012 = 61.7

OMP2012 license:9019

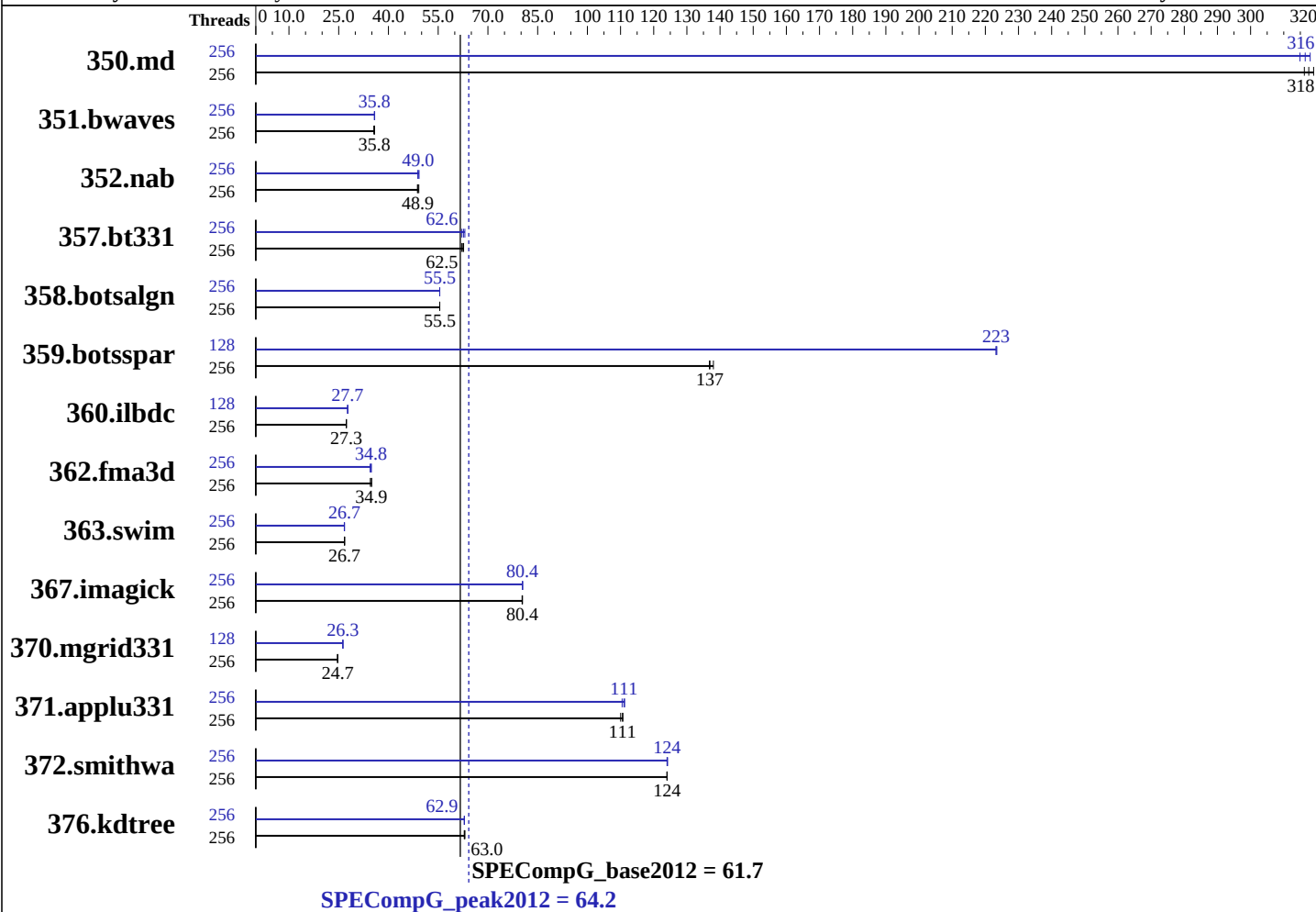
Test date: May-2024

Test sponsor: Cisco Systems

Hardware Availability: Jun-2024

Tested by: Cisco Systems

Software Availability: Feb-2024



### Hardware

CPU Name: AMD EPYC 9754  
CPU Characteristics: Max Boost Clock up to 3.1 GHz  
CPU MHz: 2250  
CPU MHz Maximum: 3100  
FPU: Integrated  
CPU(s) enabled: 128 cores, 1 chip, 128 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: 256 MB I+D on chip per chip, 32 MB shared 8 cores  
Other Cache: None  
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-5600B-R, running at 4800 MHz)  
Disk Subsystem: 1 x 240 GB M.2 SSD  
Other Hardware: None  
Base Threads Run: 256

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### Software

Operating System: SUSE Linux Enterprise Server 15 SP5  
, Kernel 5.14.21-150500.53-default  
Compiler: C/C++/Fortran: Version 2024.0.2.0 of Intel  
oneAPI DPC/C++  
Auto Parallel: Yes  
File System: xfs  
System State: Multi-user, run level 3  
Base Pointers: 64-bit  
Peak Pointers: 64-bit  
Other Software: None



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Minimum Peak Threads: 128

Maximum Peak Threads: 256

## Results Table

| Benchmark    | Base    |                    |                    |                    |                    |                    |                    | Peak    |                    |                    |                    |                    |                    |                    |
|--------------|---------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|              | Threads | Seconds            | Ratio              | Seconds            | Ratio              | Seconds            | Ratio              | Threads | Seconds            | Ratio              | Seconds            | Ratio              | Seconds            | Ratio              |
| 350.md       | 256     | 14.5               | 319                | 14.6               | 316                | <b><u>14.6</u></b> | <b><u>318</u></b>  | 256     | <b><u>14.6</u></b> | <b><u>316</u></b>  | 14.7               | 315                | 14.6               | 318                |
| 351.bwaves   | 256     | 126                | 35.8               | <b><u>127</u></b>  | <b><u>35.8</u></b> | 127                | 35.6               | 256     | <b><u>127</u></b>  | <b><u>35.8</u></b> | 127                | 35.8               | 126                | 35.8               |
| 352.nab      | 256     | 79.1               | 49.2               | <b><u>79.6</u></b> | <b><u>48.9</u></b> | 79.8               | 48.7               | 256     | 79.0               | 49.2               | 79.6               | 48.9               | <b><u>79.4</u></b> | <b><u>49.0</u></b> |
| 357.bt331    | 256     | <b><u>75.9</u></b> | <b><u>62.5</u></b> | 75.6               | 62.7               | 76.3               | 62.1               | 256     | <b><u>75.7</u></b> | <b><u>62.6</u></b> | 76.3               | 62.1               | 75.2               | 63.1               |
| 358.botsalgn | 256     | 78.4               | 55.5               | <b><u>78.4</u></b> | <b><u>55.5</u></b> | 78.4               | 55.5               | 256     | 78.4               | 55.5               | 78.4               | 55.5               | <b><u>78.4</u></b> | <b><u>55.5</u></b> |
| 359.botsspar | 256     | 38.0               | 138                | 38.4               | 137                | <b><u>38.3</u></b> | <b><u>137</u></b>  | 128     | <b><u>23.5</u></b> | <b><u>223</u></b>  | 23.5               | 223                | 23.5               | 223                |
| 360.ilbdc    | 256     | 130                | 27.3               | <b><u>130</u></b>  | <b><u>27.3</u></b> | 130                | 27.3               | 128     | <b><u>128</u></b>  | <b><u>27.7</u></b> | 128                | 27.7               | 128                | 27.7               |
| 362.fma3d    | 256     | 109                | 34.9               | 110                | 34.5               | <b><u>109</u></b>  | <b><u>34.9</u></b> | 256     | 110                | 34.5               | 109                | 34.8               | <b><u>109</u></b>  | <b><u>34.8</u></b> |
| 363.swim     | 256     | 169                | 26.8               | <b><u>169</u></b>  | <b><u>26.7</u></b> | 169                | 26.7               | 256     | 170                | 26.7               | <b><u>169</u></b>  | <b><u>26.7</u></b> | 169                | 26.7               |
| 367.imagick  | 256     | 87.4               | 80.4               | <b><u>87.4</u></b> | <b><u>80.4</u></b> | 87.6               | 80.3               | 256     | 87.4               | 80.5               | 87.4               | 80.4               | <b><u>87.4</u></b> | <b><u>80.4</u></b> |
| 370.mgrid331 | 256     | <b><u>179</u></b>  | <b><u>24.7</u></b> | 179                | 24.7               | 179                | 24.7               | 128     | <b><u>168</u></b>  | <b><u>26.3</u></b> | 168                | 26.3               | 168                | 26.3               |
| 371.applu331 | 256     | 55.1               | 110                | 54.7               | 111                | <b><u>54.8</u></b> | <b><u>111</u></b>  | 256     | 54.9               | 110                | 54.5               | 111                | <b><u>54.6</u></b> | <b><u>111</u></b>  |
| 372.smithwa  | 256     | <b><u>43.2</u></b> | <b><u>124</u></b>  | 43.2               | 124                | 43.2               | 124                | 256     | 43.2               | 124                | <b><u>43.2</u></b> | <b><u>124</u></b>  | 43.2               | 124                |
| 376.kdtree   | 256     | <b><u>71.5</u></b> | <b><u>63.0</u></b> | 71.6               | 62.9               | 71.3               | 63.1               | 256     | 71.6               | 62.8               | 71.5               | 62.9               | <b><u>71.5</u></b> | <b><u>62.9</u></b> |

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

## Platform Notes

Sysinfo program /home/omp2012/Docs/sysinfo  
Revision 563 of 2016-06-10 (097295389cf6073d8c3b03fa376740a5)  
running on localhost Wed May 8 11:26:40 2024

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 : AMD EPYC 9754 128-Core Processor

1 "physical id"s (chips)

256 "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 : 128

siblings : 256

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 28 29 30 31 32 33  
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58  
59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83  
84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105  
106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123

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## Platform Notes (Continued)

124 125 126 127  
cache size : 1024 KB

From /proc/meminfo  
MemTotal: 792193480 kB  
HugePages\_Total: 0  
Hugepagesize: 2048 kB

From /etc/\*release\* /etc/\*version\*  
os-release:  
NAME="SLES"  
VERSION="15-SP5"  
VERSION\_ID="15.5"  
PRETTY\_NAME="SUSE Linux Enterprise Server 15 SP5"  
ID="sles"  
ID\_LIKE="suse"  
ANSI\_COLOR="0;32"  
CPE\_NAME="cpe:/o:suse:sles:15:sp5"

uname -a:  
Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT\_DYNAMIC Wed May 10  
07:56:26 UTC 2023 (b630043) x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 May 5 13:56

SPEC is set to: /home/omp2012  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda2 xfs 223G 184G 39G 83% /

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.

BIOS Cisco Systems, Inc. C245M8.4.3.4.255.0410240854 04/10/2024

Memory:  
12x 0xCE00 M321R8GA0PB0-CWMCH 64 GB 2 rank 5600 MT/s

(End of data from sysinfo program)

## General Notes

=====

General OMP Library Settings

OMP\_DYNAMIC = FALSE  
KMP\_SCHEDULE = static  
KMP\_LIBRARY = turnaround  
KMP\_STACKSIZE = 256M  
KMP\_BLOCKTIME = infinite

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## General Notes (Continued)

KMP\_AFFINITY = granularity=fine,proclist=[0-7,8-15,16-23,24-31,32-39,40-47,48-55,56-63,64-71,72-79,80-87,88-95,96-103,104-111,112-119,120-127,128-135,136-143,144-151,152-159,160-167,168-175,176-183,184-191,192-199,200-207,208-215,216-223,224-231,232-239,240-247,248-255,256-263,264-271,272-279,280-287,288-295,296-303,304-311,312-319,320-327,328-335,336-343,344-351,352-359,360-367,368-375,376-383,384-391,392-399,400-407,408-415,416-423,424-431,432-439,440-447,448-455,456-463,464-471,472-479,480-487,488-495,496-503,504-511],explicit

### uEFI Setting notes:

Choose "Maximum Performance" operating mode and changed to "Custom" operating mode. Below items also configured:

- 
- NUMA Nodes per Socket = NPS2
- DRAM Scrub Time = Disabled
- CPPC = Disabled
- Global C-state control = Disabled
- 
- 

Yes: The test sponsor attests, as of date of publication, the CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, the CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Spectre variant 2) is mitigated in the system as tested and documented.

### OS tuning:

ulimit -s unlimited

## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Base Portability Flags

350.md: -FR

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## Base Portability Flags (Continued)

357.bt331: -mcmodel=medium  
363.swim: -mcmodel=medium

## Base Optimization Flags

C benchmarks:

352.nab: -w -m64 -std=c11 -Wno-implicit-function-declaration -Ofast  
-mprefer-vector-width=512 -march=common-avx512 -ipo  
-fopenmp -qopt-zmm-usage=high -ffast-math -fstrict-enums  
-fstrict-vtable-pointers -fvirtual-function-elimination

358.botsalgn: Same as 352.nab

359.botsspar: Same as 352.nab

367.imagick: -w -m64 -std=c11 -Wno-implicit-function-declaration -Ofast  
-mprefer-vector-width=512 -march=common-avx512 -ipo  
-fopenmp -qopt-zmm-usage=high -ffast-math -fstrict-enums  
-fstrict-vtable-pointers -fvirtual-function-elimination  
-std=c99(\*)

372.smithwa: Same as 352.nab

C++ benchmarks:

-w -m64 -std=c++14 -Ofast -mprefer-vector-width=512  
-march=common-avx512 -ipo -fopenmp -qopt-zmm-usage=high -ffast-math  
-fstrict-enums -fstrict-vtable-pointers

Fortran benchmarks:

-w -m64 -Ofast -mprefer-vector-width=512 -march=common-avx512 -ipo  
-fopenmp -qopt-zmm-usage=high -nostandard-realloc-lhs  
-align array32byte -auto -fimf-accuracy-bits-sqrt=14  
-fimf-precision=low

(\*) Indicates an optimization flag that was found in a portability variable.

## Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

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## Peak Compiler Invocation (Continued)

Fortran benchmarks:  
ifx

## Peak Portability Flags

350.md: -FR  
357.bt331: -mcmodel=medium  
363.swim: -mcmodel=medium

## Peak Optimization Flags

C benchmarks:

352.nab: -w -m64 -std=c11 -Wno-implicit-function-declaration -Ofast  
-mprefer-vector-width=512 -march=common-avx512 -ipo  
-fopenmp -qopt-zmm-usage=high -ffast-math -fstrict-enums  
-fstrict-vtable-pointers -fvirtual-function-elimination

358.botsalgn: Same as 352.nab

359.botsspar: Same as 352.nab

367.imagick: -w -m64 -std=c11 -Wno-implicit-function-declaration -Ofast  
-mprefer-vector-width=512 -march=common-avx512 -ipo  
-fopenmp -qopt-zmm-usage=high -ffast-math -fstrict-enums  
-fstrict-vtable-pointers -fvirtual-function-elimination  
-std=c99(\*)

372.smithwa: Same as 352.nab

C++ benchmarks:

-w -m64 -std=c++14 -Ofast -mprefer-vector-width=512  
-march=common-avx512 -ipo -fopenmp -qopt-zmm-usage=high -ffast-math  
-fstrict-enums -fstrict-vtable-pointers

Fortran benchmarks:

-w -m64 -Ofast -mprefer-vector-width=512 -march=common-avx512 -ipo  
-fopenmp -qopt-zmm-usage=high -nostandard-realloc-lhs  
-align array32byte -auto -fimf-accuracy-bits-sqrt=14  
-fimf-precision=low

(\*) Indicates an optimization flag that was found in a portability variable.



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/omp2012/flags/Intel-ic2024.2.0-OMP2012-linux64.html>

<http://www.spec.org/omp2012/flags/Cisco-Platform-Settings-AMD-v3-revA.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/omp2012/flags/Intel-ic2024.2.0-OMP2012-linux64.xml>

<http://www.spec.org/omp2012/flags/Cisco-Platform-Settings-AMD-v3-revA.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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