



SPEC® OMPG2012 Result

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Lenovo Global Technology

SPECompG_peak2012 = 53.4

ThinkSystem SR655V3(AMD EPYC 9754, 2.25GHz)

SPECompG_base2012 = 52.7

OMP2012 license:28

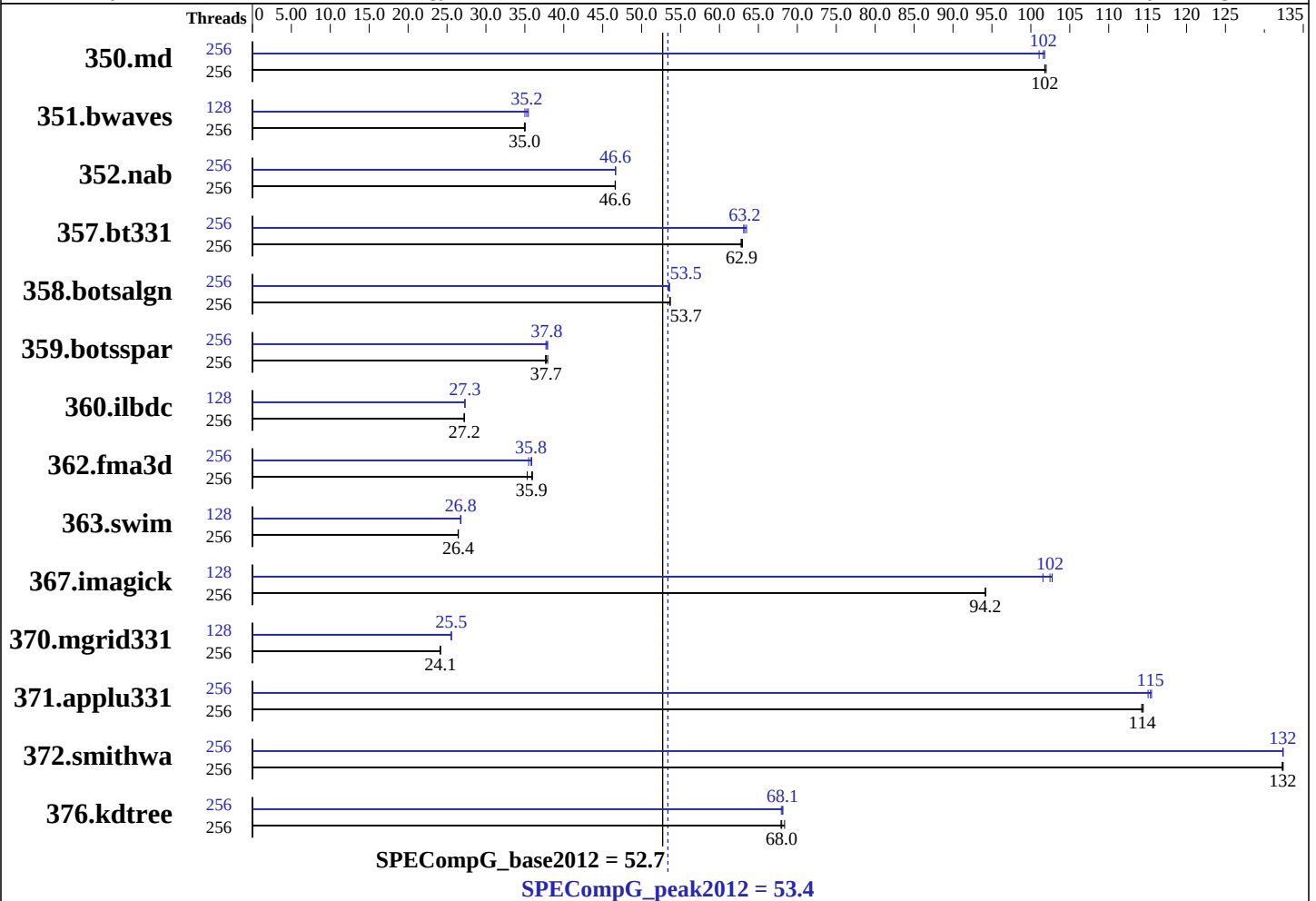
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: May-2023

Hardware Availability: Aug-2023

Software Availability: Aug-2023



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 chip
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 PC5-4800B-R)
Disk Subsystem: 1 x 1 TB SATA Hard Drive
Other Hardware: None
Base Threads Run: 256
Minimum Peak Threads: 128

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Software

Operating System: SUSE Linux Enterprise for High-Performance Computing 15 SP4 (x86_64), Kernel 5.14.21-150400.22-default
Compiler: C/C++/Fortran: Version 2022.2.0.191 of Intel oneAPI oneAPI DPC/C++
Auto Parallel: No
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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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	<u>45.5</u>	<u>102</u>	45.4	102	45.5	102	256	<u>45.6</u>	<u>102</u>	45.8	101	45.5	102
351.bwaves	256	<u>130</u>	<u>35.0</u>	130	34.9	129	35.0	128	<u>129</u>	<u>35.2</u>	128	35.5	129	35.0
352.nab	256	83.4	46.6	<u>83.5</u>	<u>46.6</u>	83.5	46.6	256	<u>83.4</u>	<u>46.6</u>	83.4	46.6	83.4	46.7
357.bt331	256	75.3	62.9	<u>75.4</u>	<u>62.9</u>	75.5	62.8	256	74.7	63.5	75.1	63.1	<u>75.0</u>	<u>63.2</u>
358.botsalgn	256	81.1	53.7	81.1	53.6	<u>81.1</u>	<u>53.7</u>	256	<u>81.2</u>	<u>53.5</u>	81.2	53.6	81.2	53.5
359.botsspar	256	138	37.9	139	37.6	<u>139</u>	<u>37.7</u>	256	139	37.7	138	37.9	<u>139</u>	<u>37.8</u>
360.ilbdc	256	<u>131</u>	<u>27.2</u>	131	27.2	131	27.2	128	130	27.3	130	27.3	<u>130</u>	<u>27.3</u>
362.fma3d	256	106	36.0	<u>106</u>	<u>35.9</u>	108	35.3	256	<u>106</u>	<u>35.8</u>	106	35.9	107	35.5
363.swim	256	171	26.4	171	26.5	<u>171</u>	<u>26.4</u>	128	<u>169</u>	<u>26.8</u>	169	26.7	169	26.8
367.imagick	256	74.6	94.2	<u>74.6</u>	<u>94.2</u>	74.7	94.2	128	<u>68.6</u>	<u>102</u>	69.2	102	68.4	103
370.mgrid331	256	<u>183</u>	<u>24.1</u>	183	24.1	183	24.2	128	<u>173</u>	<u>25.5</u>	173	25.5	173	25.6
371.applu331	256	53.0	114	53.0	114	<u>53.0</u>	<u>114</u>	256	<u>52.5</u>	<u>115</u>	52.7	115	52.5	116
372.smithwa	256	40.5	132	<u>40.5</u>	<u>132</u>	40.5	132	256	40.5	132	40.5	132	<u>40.5</u>	<u>132</u>
376.kdtree	256	65.8	68.4	<u>66.2</u>	<u>68.0</u>	66.3	67.9	256	66.2	67.9	<u>66.1</u>	<u>68.1</u>	66.1	68.1

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 bergamoA21P Tue May 16 11:01:37 2023

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
    124 125 126 127

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Platform Notes (Continued)

cache size : 1024 KB

From /proc/meminfo

MemTotal: 792101276 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

os-release:

NAME="SLE_HPC"

VERSION="15-SP4"

VERSION_ID="15.4"

PRETTY_NAME="SUSE Linux Enterprise High Performance Computing 15 SP4"

ID="sle_hpc"

ID_LIKE="suse"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sle_hpc:15:sp4"

uname -a:

Linux bergamoA21P 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 16 00:45

SPEC is set to: /home/omp2012

Filesystem Type Size Used Avail Use% Mounted on

/dev/sda3 xfs 413G 325G 89G 79% /var/tmp

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 Lenovo KAE111I-2.10 05/06/2023

Memory:

12x Samsung M321R8GA0BB0-CQKEG 64 GB 2 rank 4800 MT/s

(End of data from sysinfo program)

General Notes

General OMP Library Settings

OMP_DYNAMIC = FALSE

OMP_THREADS = 256

KMP_SCHEDULE = static

KMP_LIBRARY = turnaround

KMP_STACKSIZE = 768M

KMP_BLOCKTIME = infinite

KMP_AFFINITY = granularity=fine,proclist=[0-7,8-15,16-23,24-31,32-39,

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Standard Performance Evaluation Corporation

info@spec.org

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General Notes (Continued)

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], explicit

uEFI Setting notes:

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

-
- NUMA Nodes per Socket = NPS2
- CPPC = Disabled
- DRAM Scrub Time = 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
357.bt331: -mcmodel=medium
363.swim: -mcmodel=medium
367.imagick: -std=c99



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Base Optimization Flags

C benchmarks:

-Ofast -fopenmp -march=core-avx2 -fma -ipo -ansi-alias
-fp-model fast=2 -qno-opt-multiple-gather-scatter-by-shuffles
-qopt-zmm-usage=high -ffast-math -fstrict-enums
-fstrict-vtable-pointers -fvirtual-function-elimination

C++ benchmarks:

-Ofast -fopenmp -march=core-avx2 -fma -ipo -ansi-alias
-fp-model fast=2 -qno-opt-multiple-gather-scatter-by-shuffles
-qopt-zmm-usage=high -ffast-math -fstrict-enums
-fstrict-vtable-pointers

Fortran benchmarks:

-Ofast -fopenmp -march=core-avx2 -fma -ipo -ansi-alias
-fp-model fast=2 -qno-opt-multiple-gather-scatter-by-shuffles
-qopt-zmm-usage=high -align array128byte -ffinite-math-only
-fno-omit-frame-pointer -m64 -ipo1 -foptimize-sibling-calls -vec

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Peak Portability Flags

350.md: -FR
357.bt331: -mcmodel=medium
363.swim: -mcmodel=medium
367.imagick: -std=c99

Peak Optimization Flags

C benchmarks:

-Ofast -fopenmp -march=core-avx2 -fma -ipo -ansi-alias
-fp-model fast=2 -qno-opt-multiple-gather-scatter-by-shuffles
-qopt-zmm-usage=high -ffast-math -fstrict-enums
-fstrict-vtable-pointers -fvirtual-function-elimination

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Peak Optimization Flags (Continued)

C++ benchmarks:

-Ofast -fopenmp -march=core-avx2 -fma -ipo -ansi-alias
-fp-model fast=2 -qno-opt-multiple-gather-scatter-by-shuffles
-qopt-zmm-usage=high -ffast-math -fstrict-enums
-fstrict-vtable-pointers

Fortran benchmarks:

-Ofast -fopenmp -march=core-avx2 -fma -ipo -ansi-alias
-fp-model fast=2 -qno-opt-multiple-gather-scatter-by-shuffles
-qopt-zmm-usage=high -align array128byte -ffinite-math-only
-fno-omit-frame-pointer -m64 -ipo1 -foptimize-sibling-calls -vec

The flags file that was used to format this result can be browsed at

<http://www.spec.org/omp2012/flags/lenovo-omp2012-oneAPI.20230222.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/omp2012/flags/lenovo-omp2012-oneAPI.20230222.xml>

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC OMP2012 v1.1.

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