



SPEC® OMPG2012 Result

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Supermicro

SuperServer SYS-221H-TNR (Intel Xeon Platinum 8490H)

SPECompG_peak2012 = 58.9

SPECompG_base2012 = 58.6

OMP2012 license:001176

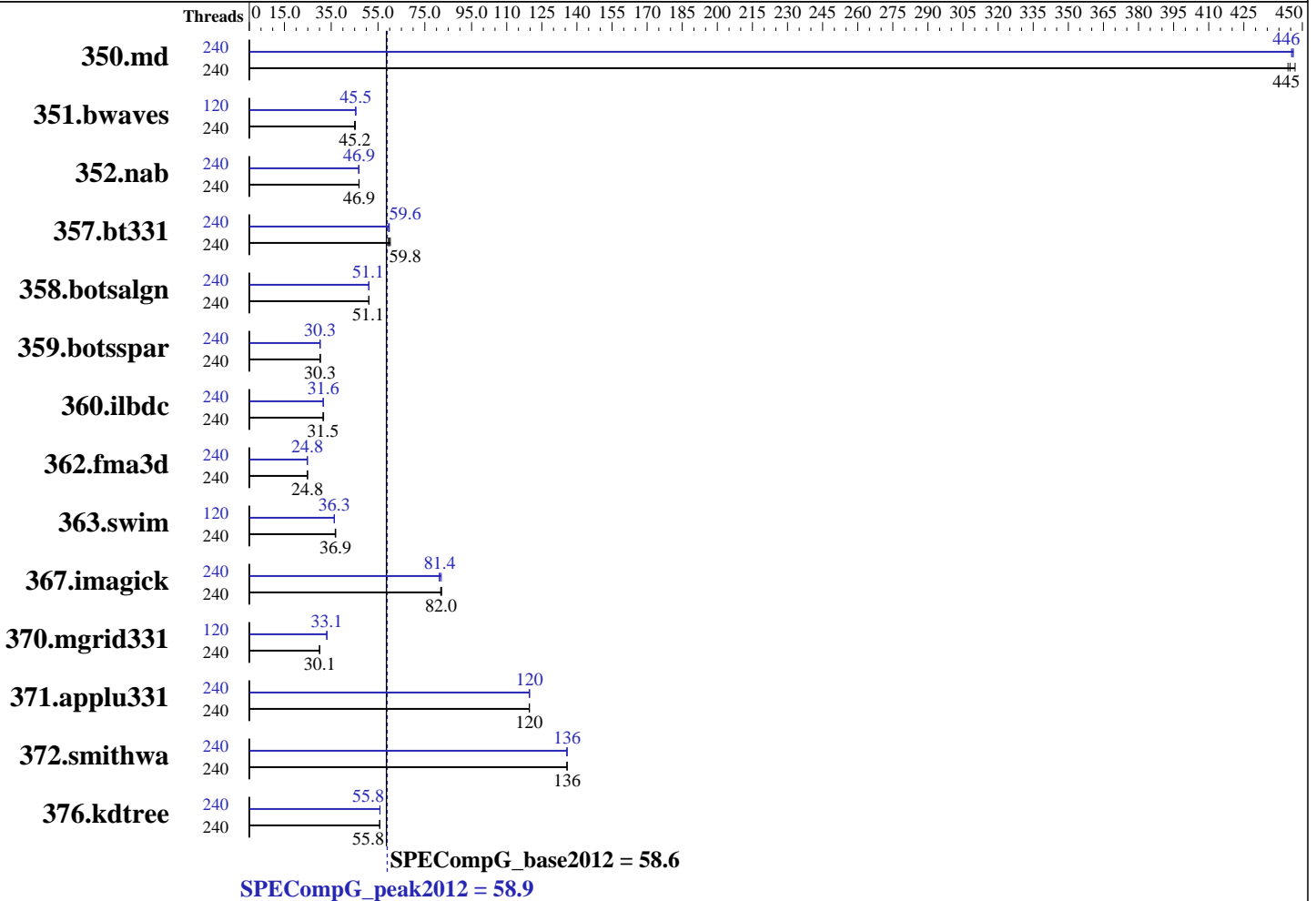
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Jan-2023

Hardware Availability: Jan-2023

Software Availability: Jun-2022



Hardware

CPU Name: Intel Xeon Platinum 8490H
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
 CPU MHz: 1900
 CPU MHz Maximum: 3500
 FPU: Integrated
 CPU(s) enabled: 120 cores, 2 chips, 60 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 chip
 Primary Cache: 32 KB I + 48 KB D on chip per core
 Secondary Cache: 2 MB I+D on chip per core
 L3 Cache: 115200 KB I+D on chip per chip
 Other Cache: None
 Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)
 Disk Subsystem: 1 x 1.90 TB M.2 NVME SSD
 Other Hardware: None
 Base Threads Run: 240
 Minimum Peak Threads: 120

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Software

Operating System: SUSE Linux Enterprise High Performance Computing 15 SP4 5.14.21-150400.22-default
 Compiler: C/C++/Fortran: Version 2023.0.0.20221208 of Intel oneAPI DPC++/C++
 Auto Parallel: No
 File System: xfs
 System State: Jun-2022
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other Software: None



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Maximum Peak Threads: 240

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	240	10.4	444	<u>10.4</u>	<u>445</u>	10.4	447	240	<u>10.4</u>	<u>446</u>	10.4	445	10.4	446
351.bwaves	240	<u>100</u>	<u>45.2</u>	100	45.3	101	45.0	120	99.6	45.5	<u>99.6</u>	<u>45.5</u>	99.6	45.5
352.nab	240	83.1	46.8	82.9	46.9	<u>82.9</u>	<u>46.9</u>	240	82.9	46.9	83.4	46.7	<u>82.9</u>	<u>46.9</u>
357.bt331	240	<u>79.3</u>	<u>59.8</u>	78.6	60.3	79.7	59.5	240	79.2	59.8	79.6	59.5	<u>79.5</u>	<u>59.6</u>
358.botsalgn	240	<u>85.1</u>	<u>51.1</u>	85.1	51.1	85.1	51.1	240	<u>85.2</u>	<u>51.1</u>	85.2	51.1	85.1	51.1
359.botsspar	240	173	30.4	174	30.2	<u>173</u>	<u>30.3</u>	240	<u>173</u>	<u>30.3</u>	174	30.2	173	30.3
360.ilbdc	240	<u>113</u>	<u>31.5</u>	113	31.5	112	31.8	240	113	31.5	112	31.7	<u>113</u>	<u>31.6</u>
362.fma3d	240	153	24.9	<u>153</u>	<u>24.8</u>	153	24.8	240	153	24.8	153	24.8	<u>153</u>	<u>24.8</u>
363.swim	240	123	36.9	<u>123</u>	<u>36.9</u>	123	36.7	120	<u>125</u>	<u>36.3</u>	125	36.3	125	36.4
367.imagick	240	86.0	81.8	<u>85.7</u>	<u>82.0</u>	85.6	82.2	240	86.6	81.2	85.7	82.0	<u>86.4</u>	<u>81.4</u>
370.mgrid331	240	<u>147</u>	<u>30.1</u>	147	30.0	147	30.1	120	<u>133</u>	<u>33.1</u>	133	33.2	133	33.1
371.applu331	240	<u>50.6</u>	<u>120</u>	50.7	120	50.6	120	240	<u>50.6</u>	<u>120</u>	50.6	120	50.6	120
372.smithwa	240	<u>39.5</u>	<u>136</u>	39.5	136	39.5	136	240	39.5	136	<u>39.5</u>	<u>136</u>	39.5	136
376.kdtree	240	80.7	55.8	<u>80.7</u>	<u>55.8</u>	80.8	55.7	240	80.6	55.8	80.5	55.9	<u>80.6</u>	<u>55.8</u>

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 156-2 Sat Jan 21 05:49:11 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 : Intel(R) Xeon(R) Platinum 8490H
 2 "physical id"s (chips)
 240 "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 : 60
siblings  : 120
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 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
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 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
```

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Platform Notes (Continued)

cache size : 115200 KB

From /proc/meminfo

MemTotal: 527567152 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 156-2 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 Jan 21 05:45 last=5

SPEC is set to: /home/omp2012

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/nvme0nlp4	xfs	348G	8.4G	340G	3%	/home

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 Supermicro X13DEM 1.1 01/20/2023

Memory:

16x Samsung M321R4GA3BB6-CQKMG 32 GB 2 rank 4800 MT/s

(End of data from sysinfo program)

General Notes

=====
BIOS Setting:

Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG Mode = Extreme Performance
Turbo Mode = Disable

=====
General OMP Library Settings:

ENV_KMP_LIBRARY = turnaround
ENV_KMP_BLOCKTIME = infinite

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General Notes (Continued)

```

ENV_OMP_STACKSIZE      = 8G
ENV_OMP_SCHEDULE       = static
ENV_OMP_THREADS        = 240
ENV_OMP_DYNAMIC        = FALSE

```

```

=====
NA: 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:
Stack size set to unlimited using "ulimit -s unlimited"

```

Base Compiler Invocation

```

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

```

Base Portability Flags

```

350.md: -mmodel=medium(*) -FR
351.bwaves: -mmodel=medium(*)
352.nab: -mmodel=medium(*)
357.bt331: -mmodel=medium(-intel_ifort)(*) -mmodel=medium(-intel_ifort)
358.botsalgn: -mmodel=medium(*)
359.botsspar: -mmodel=medium(*)
360.ilbdc: -mmodel=medium(*)
362.fma3d: -mmodel=medium(*)
363.swim: -mmodel=medium(-intel_ifort)(*) -mmodel=medium(-intel_ifort)
367.imagick: -mmodel=medium(*) -std=c99
370.mgrid331: -mmodel=medium(*)
371.applu331: -mmodel=medium(*)
372.smithwa: -mmodel=medium(*)
376.kdtree: -mmodel=medium(*)

```

(*) Indicates a portability flag that was found in a non-portability variable.



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Base Optimization Flags

C benchmarks:

-O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high -ansi-alias
-shared-intel -ffast-math -fstrict-enums -fstrict-vtable-pointers
-fvirtual-function-elimination

C++ benchmarks:

-O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high -ansi-alias
-shared-intel -ffast-math -fstrict-enums -fstrict-vtable-pointers

Fortran benchmarks:

-O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high -ansi-alias
-shared-intel -align array128byte -ffinite-math-only
-fno-omit-frame-pointer -m64

Peak Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

352.nab: -O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high
-ansi-alias -shared-intel -ffast-math -fstrict-enums
-fstrict-vtable-pointers -fvirtual-function-elimination
-fno-signed-zeros

358.botsalgn: -O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high
-ansi-alias -shared-intel -ffast-math -fstrict-enums
-fstrict-vtable-pointers -fvirtual-function-elimination

359.botsspar: Same as 358.botsalgn

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Peak Optimization Flags (Continued)

367.imagick: Same as 358.botsalgn

372.smithwa: Same as 358.botsalgn

C++ benchmarks:

-O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high -ansi-alias
-shared-intel -ffast-math -fstrict-enums -fstrict-vtable-pointers

Fortran benchmarks:

350.md: -O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high
-ansi-alias -shared-intel -align array128byte
-ffinite-math-only -fno-omit-frame-pointer -m64

351.bwaves: Same as 350.md

357.bt331: -O4 -xCORE-AVX512 -ipo1 -qopenmp -qopt-zmm-usage=high
-ansi-alias -shared-intel -align array128byte
-ffinite-math-only -fno-omit-frame-pointer -m64 -norecursive

360.ilbdc: Same as 350.md

362.fma3d: Same as 350.md

363.swim: Same as 350.md

370.mgrid331: Same as 350.md

371.applu331: Same as 350.md

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

<http://www.spec.org/omp2012/flags/Supermicro-ic2022.linux64-oneAPI.html>

<http://www.spec.org/omp2012/flags/Supermicro-Platform-Settings-V1.2-SPR-revC.html>

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

<http://www.spec.org/omp2012/flags/Supermicro-ic2022.linux64-oneAPI.xml>

<http://www.spec.org/omp2012/flags/Supermicro-Platform-Settings-V1.2-SPR-revC.xml>

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

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