



SPEC® OMPG2012 Result

Copyright 2012-2021 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECompG_peak2012 = 45.2

ThinkSystem SR665(AMD EPYC 7763 CPU, 2.45GHz)

SPECompG_base2012 = 44.7

OMP2012 license:28

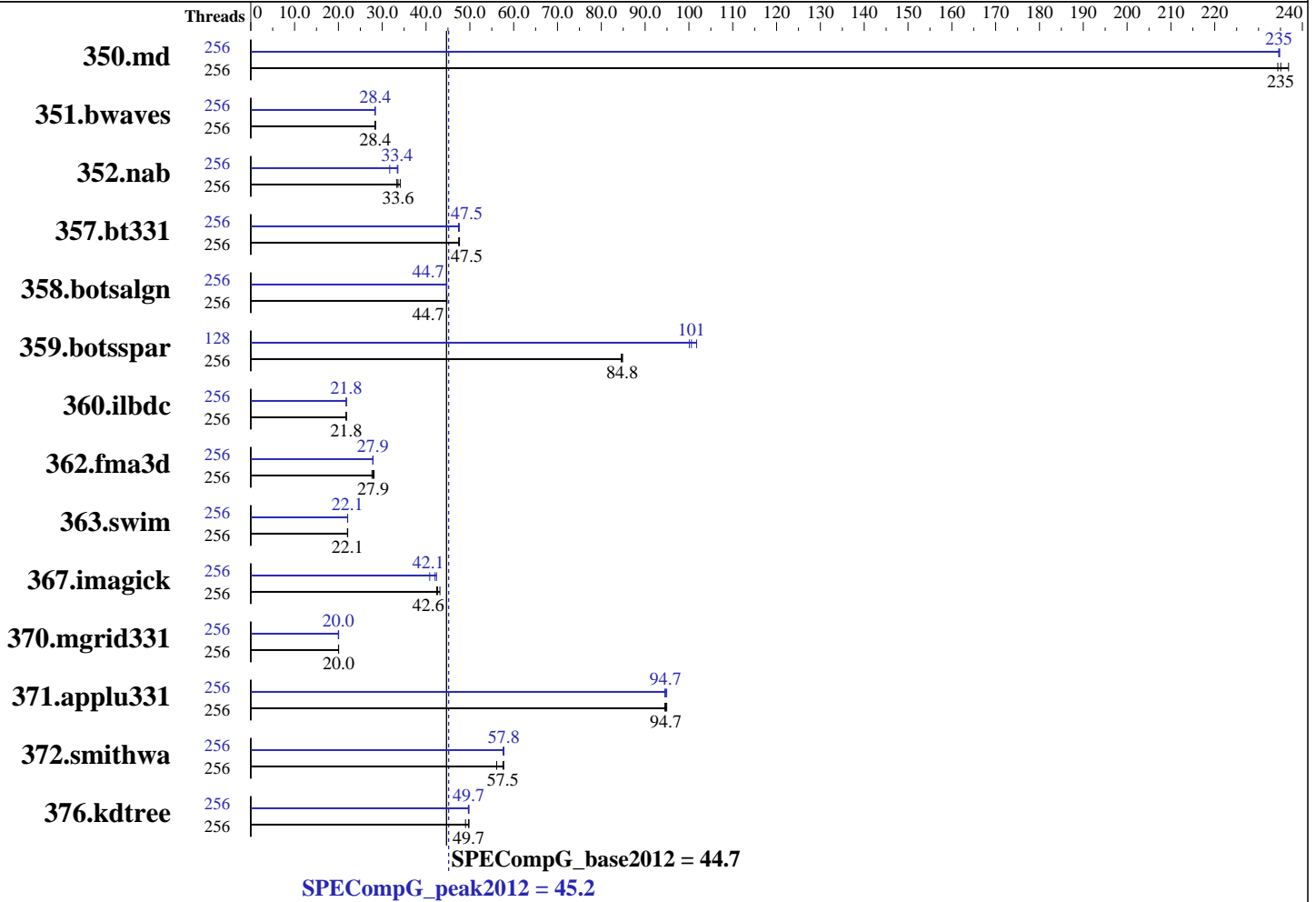
Test date: Feb-2021

Test sponsor: Lenovo Global Technology

Hardware Availability: Mar-2021

Tested by: Lenovo Global Technology

Software Availability: Mar-2021



Hardware

CPU Name: AMD EPYC 7763 CPU
 CPU Characteristics: Turbo up to 3.5 GHz
 CPU MHz: 2450
 CPU MHz Maximum: 3500
 FPU: Integrated
 CPU(s) enabled: 128 cores, 2 chips, 64 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: 512 KB 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: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R)
 Disk Subsystem: 1 x 1 TB SATA Hard Drive
 Other Hardware: None
 Base Threads Run: 256
 Minimum Peak Threads: 128

Continued on next page

Software

Operating System: Red Hat Enterprise Linux 8.3 (x86_64), Kernel 4.18.0-240.el8.x86_64
 Compiler: C/C++/Fortran: Version 19.4 of PGI Community Edition
 Auto Parallel: No
 File System: xfs
 System State: Multi-user, run level 3
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 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	19.5	237	<u>19.7</u>	<u>235</u>	19.8	234	256	19.7	235	19.7	235	<u>19.7</u>	<u>235</u>
351.bwaves	256	160	28.4	159	28.4	<u>159</u>	<u>28.4</u>	256	<u>159</u>	<u>28.4</u>	160	28.3	159	28.4
352.nab	256	117	33.3	<u>116</u>	<u>33.6</u>	114	34.1	256	116	33.6	<u>116</u>	<u>33.4</u>	123	31.7
357.bt331	256	<u>99.7</u>	<u>47.5</u>	99.5	47.6	99.9	47.5	256	<u>99.8</u>	<u>47.5</u>	100	47.4	99.6	47.6
358.botsalgn	256	97.3	44.7	<u>97.2</u>	<u>44.7</u>	97.2	44.8	256	<u>97.3</u>	<u>44.7</u>	97.3	44.7	97.2	44.7
359.botsspar	256	61.9	84.8	<u>61.9</u>	<u>84.8</u>	62.1	84.6	128	<u>52.2</u>	<u>101</u>	52.5	100	51.6	102
360.ilbdc	256	163	21.8	164	21.8	<u>163</u>	<u>21.8</u>	256	163	21.8	<u>163</u>	<u>21.8</u>	163	21.8
362.fma3d	256	<u>136</u>	<u>27.9</u>	137	27.7	135	28.2	256	136	27.9	<u>136</u>	<u>27.9</u>	137	27.8
363.swim	256	205	22.1	205	22.1	<u>205</u>	<u>22.1</u>	256	205	22.1	205	22.1	<u>205</u>	<u>22.1</u>
367.imagick	256	166	42.4	163	43.2	<u>165</u>	<u>42.6</u>	256	166	42.4	<u>167</u>	<u>42.1</u>	172	40.8
370.mgrid331	256	220	20.0	221	20.0	<u>221</u>	<u>20.0</u>	256	221	20.0	220	20.1	<u>221</u>	<u>20.0</u>
371.applu331	256	64.1	94.5	63.8	94.9	<u>64.0</u>	<u>94.7</u>	256	64.1	94.5	63.8	94.9	<u>64.0</u>	<u>94.7</u>
372.smithwa	256	92.8	57.7	95.5	56.1	<u>93.2</u>	<u>57.5</u>	256	<u>92.8</u>	<u>57.8</u>	92.8	57.8	93.1	57.6
376.kdtree	256	<u>90.5</u>	<u>49.7</u>	90.4	49.8	91.8	49.0	256	90.4	49.8	90.6	49.7	<u>90.5</u>	<u>49.7</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 SR665_SPEComp Mon Feb 22 04:52:32 2021

```

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 7763 64-Core Processor
 2 "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 : 64
siblings  : 128
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 60 61 62 63
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 60 61 62 63

```

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Platform Notes (Continued)

cache size : 512 KB

From /proc/meminfo

```
MemTotal:      1056386180 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

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

os-release:

```
NAME="Red Hat Enterprise Linux"
VERSION="8.3 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.3"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
ANSI_COLOR="0;31"
```

redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)

system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)

system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:

```
Linux SR665_SPEComp 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Feb 22 04:51

SPEC is set to: /home/omp2012

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs      819G  135G  684G  17% /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 Lenovo D8E113Y-2.00 01/20/2021

Memory:

32x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200 MT/s

(End of data from sysinfo program)

General Notes

=====

General OMP Library Settings

```
ENV_KMP_AFFINITY=granularity=fine,proclist=[0-15,16-31,32-47,48-63,64-79,
80-95,96-111,112-127,128-143,144-159,160-175,176-191,192-207,208-223,
224-239,240-255],explicit
```

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General Notes (Continued)

```

ENV_OMP_THREADS = 256
ENV_KMP_STACKSIZE = 256M
ENV_KMP_BLOCKTIME = infinite
ENV_KMP_LIBRARY = turnaround
ENV_OMP_DYNAMIC = FALSE
ENV_OMP_NESTED = FALSE
ENV_OMP_SCHEDULE = static

```

```

=====
BIOS Setting notes:
-----

```

```

Choose Operating Mode set to Maximum Performance and changed to Customer Mode
CPPC set as Disable
ACPI SRAT L3 Cache as NUMA Domain set as Enabled
SOC P-State set as P0

```

```

=====
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

```

```

=====
Peak config:
359.botsspar:peak
    threads=128
371.applu331:peak
    threads=128
=====

```

Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgc++

Fortran benchmarks:

pgfortran

Base Portability Flags

350.md: -Mfree

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Base Portability Flags (Continued)

357.bt331: -mcmmodel=medium
362.fma3d: -Mfree
363.swim: -mcmmodel=medium

Base Optimization Flags

C benchmarks:

-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Masmkeyword
-Mnosingle -Mschar -Mnoml28

C++ benchmarks:

-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mnoasmkeyword

Fortran benchmarks:

350.md: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer

351.bwaves: Same as 350.md

357.bt331: Same as 350.md

360.ilbdc: Same as 350.md

362.fma3d: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer -Mnoupcase -pgf90libs

363.swim: Same as 350.md

370.mgrid331: Same as 350.md

371.applu331: Same as 350.md

Peak Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgc++

Fortran benchmarks:

pgfortran



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Peak Portability Flags

350.md: -Mfree
357.bt331: -mcmmodel=medium
362.fma3d: -Mfree
363.swim: -mcmmodel=medium

Peak Optimization Flags

C benchmarks:

352.nab: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Masmkeyword -Mnosingle -Mschar -Mnoml28 -alias=ansi
358.botsalgn: Same as 352.nab
359.botsspar: Same as 352.nab
367.imagick: Same as 352.nab
372.smithwa: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Masmkeyword -Mnosingle -Mschar -Mnoml28

C++ benchmarks:

-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mnoasmkeyword
-Mnosingle -alias=ansi

Fortran benchmarks:

350.md: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer -Mbackslash -Mdlines
351.bwaves: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -fastsse
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer -Mfixed -pgf77libs
357.bt331: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -fastsse
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer
360.ilbdc: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer -Mnoupcase
362.fma3d: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer -Mnoupcase -pgf90libs

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Peak Optimization Flags (Continued)

363.swim: -O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed
-Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex
-Mcray=pointer

370.mgrid331: Same as 363.swim

371.applu331: Same as 363.swim

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

<http://www.spec.org/omp2012/flags/Lenovo-OMP2012-Rome7H12.20210315.html>

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

<http://www.spec.org/omp2012/flags/Lenovo-OMP2012-Rome7H12.20210315.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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