



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

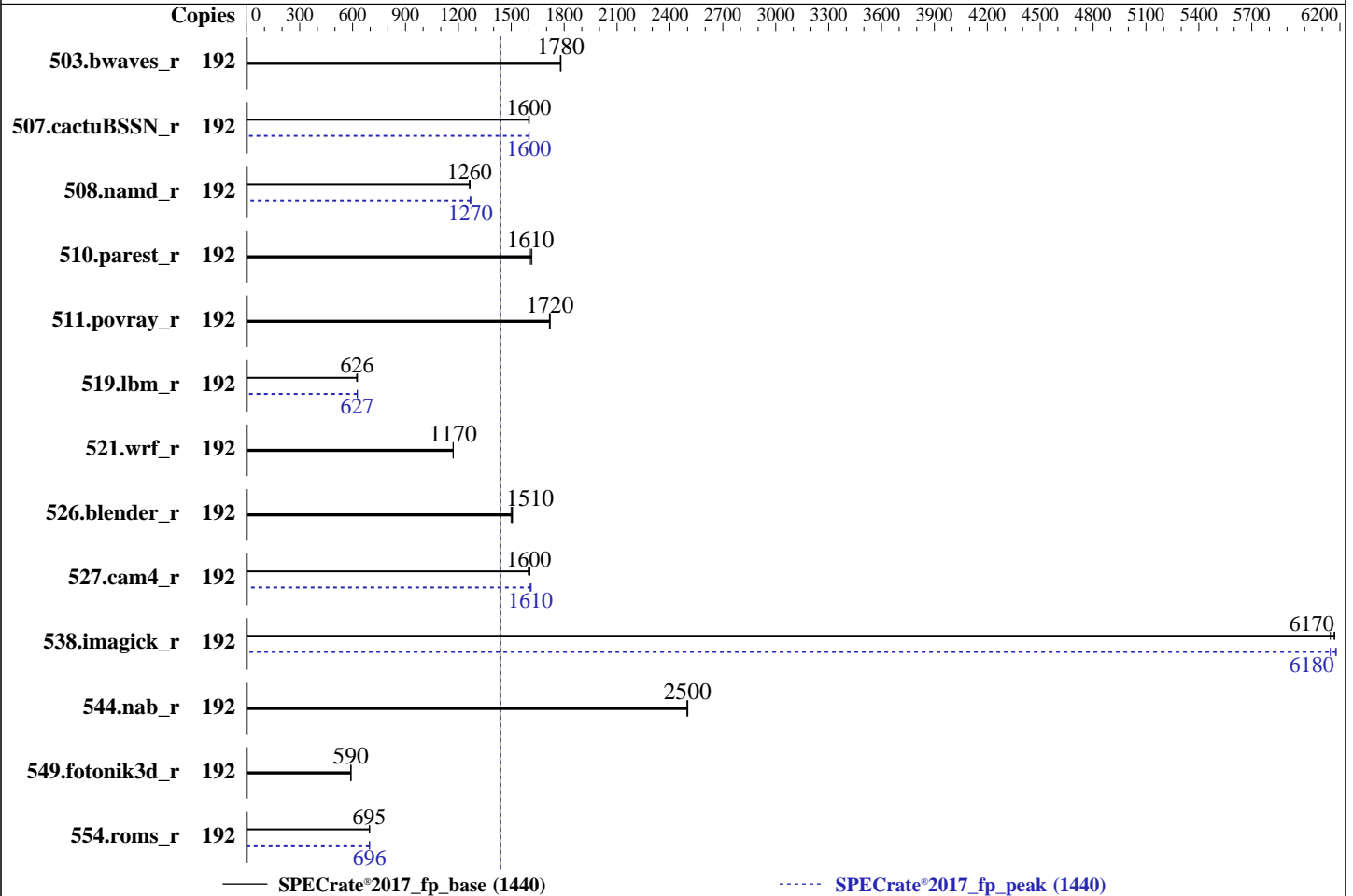
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022



### Hardware

CPU Name: AMD EPYC 9654  
 Max MHz: 3700  
 Nominal: 2400  
 Enabled: 192 cores, 2 chips  
 Orderable: 2 chips  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 384 MB I+D on chip per chip,  
 32 MB shared / 8 cores  
 Other: None  
 Memory: 768 GB (24 x 32 GB 2Rx8 PC5-4800B-R)  
 Storage: 1 x 3.84 TB NVME SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86\_64)  
 Kernel 5.14.21-150400.22-default  
 Compiler: C/C++/Fortran: Version 4.0.0 of AOCC  
 Parallel: No  
 Firmware: Lenovo BIOS Version QGE1050 1.10 released Dec-2022  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 Other: None  
 Power Management: BIOS and OS set to prefer performance at the cost of additional power usage



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	192	1081	1780	<b><u>1081</u></b>	<b><u>1780</u></b>	1083	1780	192	1081	1780	<b><u>1081</u></b>	<b><u>1780</u></b>	1083	1780
507.cactuBSSN_r	192	152	1600	<b><u>152</u></b>	<b><u>1600</u></b>	152	1600	192	152	1600	152	1600	<b><u>152</u></b>	<b><u>1600</u></b>
508.namd_r	192	144	1270	144	1260	<b><u>144</u></b>	<b><u>1260</u></b>	192	<b><u>144</u></b>	<b><u>1270</u></b>	144	1270	144	1270
510.parest_r	192	<b><u>312</u></b>	<b><u>1610</u></b>	311	1620	314	1600	192	<b><u>312</u></b>	<b><u>1610</u></b>	311	1620	314	1600
511.povray_r	192	<b><u>261</u></b>	<b><u>1720</u></b>	261	1720	261	1720	192	<b><u>261</u></b>	<b><u>1720</u></b>	261	1720	261	1720
519.lbm_r	192	323	627	325	623	<b><u>323</u></b>	<b><u>626</u></b>	192	<b><u>323</u></b>	<b><u>627</u></b>	323	626	323	627
521.wrf_r	192	368	1170	367	1170	<b><u>367</u></b>	<b><u>1170</u></b>	192	368	1170	367	1170	<b><u>367</u></b>	<b><u>1170</u></b>
526.blender_r	192	<b><u>194</u></b>	<b><u>1510</u></b>	194	1510	195	1500	192	<b><u>194</u></b>	<b><u>1510</u></b>	194	1510	195	1500
527.cam4_r	192	<b><u>210</u></b>	<b><u>1600</u></b>	209	1610	210	1600	192	208	1610	209	1610	<b><u>209</u></b>	<b><u>1610</u></b>
538.imagick_r	192	77.7	6150	77.4	6170	<b><u>77.4</u></b>	<b><u>6170</u></b>	192	<b><u>77.3</u></b>	<b><u>6180</u></b>	77.3	6180	77.7	6150
544.nab_r	192	129	2500	129	2500	<b><u>129</u></b>	<b><u>2500</u></b>	192	129	2500	129	2500	<b><u>129</u></b>	<b><u>2500</u></b>
549.fotonik3d_r	192	1266	591	1268	590	<b><u>1268</u></b>	<b><u>590</u></b>	192	1266	591	1268	590	<b><u>1268</u></b>	<b><u>590</u></b>
554.roms_r	192	<b><u>439</u></b>	<b><u>695</u></b>	439	695	438	696	192	<b><u>438</u></b>	<b><u>696</u></b>	438	696	439	695

SPECrate®2017\_fp\_base = **1440**

SPECrate®2017\_fp\_peak = **1440**

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

## Compiler Notes

The AMD64 AOCC Compiler Suite is available at  
<http://developer.amd.com/amd-aocc/>

## Submit Notes

The config file option 'submit' was used.  
'numactl' was used to bind copies to the cores.  
See the configuration file for details.

## Operating System Notes

'ulimit -s unlimited' was used to set environment stack size limit  
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty\_ratio=8' run as root.  
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.  
To free node-local memory and avoid remote memory usage,  
'sysctl -w vm.zone\_reclaim\_mode=1' run as root.

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Date:** Jan-2023

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Dec-2022

**Tested by:** Lenovo Global Technology

**Software Availability:** Nov-2022

### Operating System Notes (Continued)

To clear filesystem caches, 'sync; sysctl -w vm.drop\_caches=3' run as root.  
To disable address space layout randomization (ASLR) to reduce run-to-run variability, 'sysctl -w kernel.randomize\_va\_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations, 'echo always > /sys/kernel/mm/transparent\_hugepage/enabled' and 'echo always > /sys/kernel/mm/transparent\_hugepage/defrag' run as root.

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:  
LD\_LIBRARY\_PATH =  
"/home/cpu2017-1.1.8-amd-aocc400-genoa-Blb/amd\_rate\_aocc400\_genoa\_B\_lib/  
lib:/home/cpu2017-1.1.8-amd-aocc400-genoa-Blb/amd\_rate\_aocc400\_genoa\_B\_l  
ib/lib32:"  
MALLOC\_CONF = "retain:true"

### General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6  
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.  
Yes: The test sponsor attests, as of date of publication, that 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-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

### Platform Notes

BIOS configuration:  
Operating Mode set to Maximum Performance and then set it to Custom Mode  
NUMA Nodes per Socket set to NPS4  
ACPI SRAT L3 Cache as NUMA Domain set to Enabled  
L2 Stream HW Prefetcher set to Disabled  
SMT Mode set to Disabled

Sysinfo program /home/cpu2017-1.1.8-amd-aocc400-genoa-Blb/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d  
running on localhost Sun Jan 1 23:54:32 2023

SUT (System Under Test) info as seen by some common utilities.

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Date: Jan-2023

Test Sponsor: Lenovo Global Technology

Hardware Availability: Dec-2022

Tested by: Lenovo Global Technology

Software Availability: Nov-2022

### Platform Notes (Continued)

For more information on this section, see  
<https://www.spec.org/cpu2017/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : AMD EPYC 9654 96-Core Processor

2 "physical id"s (chips)

192 "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 : 96

siblings : 96

physical 0: cores 0 1 2 3 4 5 6 7 20 21 22 23 36 37 38 39 48 49 50 51 52 53 54 55  
64 65 66 67 68 69 70 71 84 85 86 87 96 97 98 99 100 101 102 103 112 113 114 115 116  
117 118 119 128 129 130 131 132 133 134 135 144 145 146 147 148 149 150 151 160 161  
162 163 164 165 166 167 176 177 178 179 180 181 182 183

physical 1: cores 0 1 2 3 4 5 6 7 20 21 22 23 36 37 38 39 48 49 50 51 52 53 54 55  
64 65 66 67 68 69 70 71 84 85 86 87 96 97 98 99 100 101 102 103 112 113 114 115 116  
117 118 119 128 129 130 131 132 133 134 135 144 145 146 147 148 149 150 151 160 161  
162 163 164 165 166 167 176 177 178 179 180 181 182 183

From lscpu from util-linux 2.37.2:

Architecture: x86\_64  
CPU op-mode(s): 32-bit, 64-bit  
Address sizes: 52 bits physical, 57 bits virtual  
Byte Order: Little Endian  
CPU(s): 192  
On-line CPU(s) list: 0-191  
Vendor ID: AuthenticAMD  
Model name: AMD EPYC 9654 96-Core Processor  
CPU family: 25  
Model: 17  
Thread(s) per core: 1  
Core(s) per socket: 96  
Socket(s): 2  
Stepping: 1  
Frequency boost: enabled  
CPU max MHz: 3707.8120  
CPU min MHz: 1500.0000  
BogoMIPS: 4800.01  
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr  
pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr\_opt  
pdpe1gb rdtscp lm constant\_tsc rep\_good nopl nonstop\_tsc cpuid extd\_apicid  
aperfmpperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid sse4\_1 sse4\_2 x2apic movbe  
popcnt aes xsave avx f16c rdrand lahf\_lm cmp\_legacy svm extapic cr8\_legacy abm sse4a  
misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext perfctr\_core perfctr\_nb  
bpxt perfctr\_llc mwaitx cpb cat\_l3 cdp\_l3 invpcid\_single hw\_pstate ssbd mba ibrs  
ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt\_a avx512f

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Date: Jan-2023

Test Sponsor: Lenovo Global Technology

Hardware Availability: Dec-2022

Tested by: Lenovo Global Technology

Software Availability: Nov-2022

### Platform Notes (Continued)

```

avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw
avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt
lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
pfthreshold avic v_ymSAVE_ymload vgif v_spec_ctrl avx512vbmi umip pku ospke
avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57
rdpid overflow_recov succor smca fsrm flush_lld

```

Virtualization:

AMD-V

```

L1d cache: 6 MiB (192 instances)
L1i cache: 6 MiB (192 instances)
L2 cache: 192 MiB (192 instances)
L3 cache: 768 MiB (24 instances)

```

NUMA node(s):

24

```

NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
NUMA node2 CPU(s): 16-23
NUMA node3 CPU(s): 24-31
NUMA node4 CPU(s): 32-39
NUMA node5 CPU(s): 40-47
NUMA node6 CPU(s): 48-55
NUMA node7 CPU(s): 56-63
NUMA node8 CPU(s): 64-71
NUMA node9 CPU(s): 72-79
NUMA node10 CPU(s): 80-87
NUMA node11 CPU(s): 88-95
NUMA node12 CPU(s): 96-103
NUMA node13 CPU(s): 104-111
NUMA node14 CPU(s): 112-119
NUMA node15 CPU(s): 120-127
NUMA node16 CPU(s): 128-135
NUMA node17 CPU(s): 136-143
NUMA node18 CPU(s): 144-151
NUMA node19 CPU(s): 152-159
NUMA node20 CPU(s): 160-167
NUMA node21 CPU(s): 168-175
NUMA node22 CPU(s): 176-183
NUMA node23 CPU(s): 184-191

```

Vulnerability Itlb multihit: Not affected

Vulnerability L1tf: Not affected

Vulnerability Mds: Not affected

Vulnerability Meltdown: Not affected

Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp

Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and \_\_user pointer sanitization

Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS\_FW, STIBP disabled, RSB filling

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Date: Jan-2023

Test Sponsor: Lenovo Global Technology

Hardware Availability: Dec-2022

Tested by: Lenovo Global Technology

Software Availability: Nov-2022

### Platform Notes (Continued)

Vulnerability Srbds: Not affected  
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	32K	6M	8	Data	1	64	1	64
L1i	32K	6M	8	Instruction	1	64	1	64
L2	1M	192M	8	Unified	2	2048	1	64
L3	32M	768M	16	Unified	3	32768	1	64

/proc/cpuinfo cache data  
cache size : 1024 KB

From numactl --hardware

WARNING: a numactl 'node' might or might not correspond to a physical chip.

```

available: 24 nodes (0-23)
node 0 cpus: 0 1 2 3 4 5 6 7
node 0 size: 31874 MB
node 0 free: 30088 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 32250 MB
node 1 free: 31807 MB
node 2 cpus: 16 17 18 19 20 21 22 23
node 2 size: 32215 MB
node 2 free: 31887 MB
node 3 cpus: 24 25 26 27 28 29 30 31
node 3 size: 32250 MB
node 3 free: 32039 MB
node 4 cpus: 32 33 34 35 36 37 38 39
node 4 size: 32250 MB
node 4 free: 32098 MB
node 5 cpus: 40 41 42 43 44 45 46 47
node 5 size: 32250 MB
node 5 free: 32118 MB
node 6 cpus: 48 49 50 51 52 53 54 55
node 6 size: 32250 MB
node 6 free: 32096 MB
node 7 cpus: 56 57 58 59 60 61 62 63
node 7 size: 32250 MB
node 7 free: 32127 MB
node 8 cpus: 64 65 66 67 68 69 70 71
node 8 size: 32250 MB
node 8 free: 32112 MB
node 9 cpus: 72 73 74 75 76 77 78 79
node 9 size: 32250 MB
node 9 free: 32129 MB
node 10 cpus: 80 81 82 83 84 85 86 87

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

### Platform Notes (Continued)

```

node 10 size: 32250 MB
node 10 free: 32135 MB
node 11 cpus: 88 89 90 91 92 93 94 95
node 11 size: 32250 MB
node 11 free: 32122 MB
node 12 cpus: 96 97 98 99 100 101 102 103
node 12 size: 32250 MB
node 12 free: 32118 MB
node 13 cpus: 104 105 106 107 108 109 110 111
node 13 size: 32250 MB
node 13 free: 32135 MB
node 14 cpus: 112 113 114 115 116 117 118 119
node 14 size: 32250 MB
node 14 free: 32130 MB
node 15 cpus: 120 121 122 123 124 125 126 127
node 15 size: 32250 MB
node 15 free: 32125 MB
node 16 cpus: 128 129 130 131 132 133 134 135
node 16 size: 32250 MB
node 16 free: 32109 MB
node 17 cpus: 136 137 138 139 140 141 142 143
node 17 size: 32250 MB
node 17 free: 32121 MB
node 18 cpus: 144 145 146 147 148 149 150 151
node 18 size: 32250 MB
node 18 free: 32129 MB
node 19 cpus: 152 153 154 155 156 157 158 159
node 19 size: 32250 MB
node 19 free: 32126 MB
node 20 cpus: 160 161 162 163 164 165 166 167
node 20 size: 32250 MB
node 20 free: 32139 MB
node 21 cpus: 168 169 170 171 172 173 174 175
node 21 size: 32250 MB
node 21 free: 32127 MB
node 22 cpus: 176 177 178 179 180 181 182 183
node 22 size: 32250 MB
node 22 free: 32122 MB
node 23 cpus: 184 185 186 187 188 189 190 191
node 23 size: 32048 MB
node 23 free: 31927 MB
node distances:
node 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
20 21 22 23
0: 10 11 11 12 12 12 12 12 12 12 12 12 32 32 32 32 32 32 32
32 32 32 32
1: 11 10 11 12 12 12 12 12 12 12 12 12 32 32 32 32 32 32 32

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2023

Hardware Availability: Dec-2022

Software Availability: Nov-2022

### Platform Notes (Continued)

```

32 32 32 32
2: 11 11 10 12 12 12 12 12 12 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
3: 12 12 12 10 11 11 12 12 12 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
4: 12 12 12 11 10 11 12 12 12 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
5: 12 12 12 11 11 10 12 12 12 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
6: 12 12 12 12 12 12 10 11 11 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
7: 12 12 12 12 12 12 11 10 11 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
8: 12 12 12 12 12 12 11 11 10 12 12 12 32 32 32 32 32 32 32 32
32 32 32 32
9: 12 12 12 12 12 12 12 12 12 10 11 11 32 32 32 32 32 32 32 32
32 32 32 32
10: 12 12 12 12 12 12 12 12 12 11 10 11 32 32 32 32 32 32 32 32
32 32 32 32
11: 12 12 12 12 12 12 12 12 12 11 11 10 32 32 32 32 32 32 32 32
32 32 32 32
12: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 10 11 11 12 12 12 12
12 12 12 12
13: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 10 11 12 12 12 12
12 12 12 12
14: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 10 12 12 12 12
12 12 12 12
15: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 10 11 11 12 12
12 12 12 12
16: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 11 10 11 12 12
12 12 12 12
17: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 11 11 10 12 12
12 12 12 12
18: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 10 11
11 12 12 12
19: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 11 10
11 12 12 12
20: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 11 11
10 12 12 12
21: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12 10 11 11
22: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12 11 10 11
23: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12 11 11 10

```

From /proc/meminfo

(Continued on next page)





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023  
**Hardware Availability:** Dec-2022  
**Software Availability:** Nov-2022

### Platform Notes (Continued)

MemTotal: 791962680 kB  
HugePages\_Total: 0  
Hugepagesize: 2048 kB

/sys/devices/system/cpu/cpu\*/cpufreq/scaling\_governor has performance

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

```
os-release:
  NAME="SLES"
  VERSION="15-SP4"
  VERSION_ID="15.4"
  PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"
  ID="sles"
  ID_LIKE="suse"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:15:sp4"
```

uname -a:

```
Linux localhost 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
```

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):	Not affected
CVE-2018-3620 (L1 Terminal Fault):	Not affected
Microarchitectural Data Sampling:	Not affected
CVE-2017-5754 (Meltdown):	Not affected
CVE-2018-3639 (Speculative Store Bypass):	Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):	Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Retpolines, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

run-level 3 Jan 1 23:53

SPEC is set to: /home/cpu2017-1.1.8-amd-aocc400-genoa-B1b

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/nvme1nlp3	xfsc	3.5T	27G	3.5T	1%	/

From /sys/devices/virtual/dmi/id

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Date: Jan-2023

Test Sponsor: Lenovo Global Technology

Hardware Availability: Dec-2022

Tested by: Lenovo Global Technology

Software Availability: Nov-2022

### Platform Notes (Continued)

Vendor: Lenovo  
Product: ThinkSystem SD665 V3  
Product Family: ThinkSystem  
Serial: 1234567890

Additional information from dmidecode 3.2 follows. 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.

Memory:

5x Samsung M321R4GA3BB0-CQKMG 32 GB 2 rank 4800  
3x Samsung M321R4GA3BB0-CQKVG 32 GB 2 rank 4800  
16x Samsung M321R4GA3BB6-CQKVG 32 GB 2 rank 4800

BIOS:

BIOS Vendor: Lenovo  
BIOS Version: QGE1050-1.10  
BIOS Date: 12/19/2022  
BIOS Revision: 1.10  
Firmware Revision: 0.90

(End of data from sysinfo program)

### Compiler Version Notes

=====  
C | 519.lbm\_r(base, peak) 538.imagick\_r(base, peak)  
| 544.nab\_r(base, peak)  
=====

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
=====

=====  
C++ | 508.namd\_r(base, peak) 510.parest\_r(base, peak)  
=====

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
=====

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023  
**Hardware Availability:** Dec-2022  
**Software Availability:** Nov-2022

### Compiler Version Notes (Continued)

=====  
C++, C | 511.povray\_r(base, peak) 526.blender\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
-----

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
-----

=====  
Fortran | 503.bwaves\_r(base, peak) 549.fotonik3d\_r(base, peak)  
554.roms\_r(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
-----

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Date:** Jan-2023

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Dec-2022

**Tested by:** Lenovo Global Technology

**Software Availability:** Nov-2022

### Compiler Version Notes (Continued)

Fortran, C | 521.wrf\_r(base, peak) 527.cam4\_r(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

### Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using both C and C++:

clang++ clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang

### Base Portability Flags

503.bwaves\_r: -DSPEC\_LP64

507.cactuBSSN\_r: -DSPEC\_LP64

508.namd\_r: -DSPEC\_LP64

510.parest\_r: -DSPEC\_LP64

511.povray\_r: -DSPEC\_LP64

519.lbm\_r: -DSPEC\_LP64

521.wrf\_r: -DSPEC\_CASE\_FLAG -Mbyteswapio -DSPEC\_LP64

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

CPU2017 License: 9017

Test Date: Jan-2023

Test Sponsor: Lenovo Global Technology

Hardware Availability: Dec-2022

Tested by: Lenovo Global Technology

Software Availability: Nov-2022

## Base Portability Flags (Continued)

```
526.blender_r: -funsigned-char -DSPEC_LP64
527.cam4_r: -DSPEC_CASE_FLAG -DSPEC_LP64
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64
```

## Base Optimization Flags

### C benchmarks:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -lamdlibm -lamdalloc -lflang
```

### C++ benchmarks:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang
```

### Fortran benchmarks:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -Kieee -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang
```

### Benchmarks using both Fortran and C:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -Kieee -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):

-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang

Benchmarks using both C and C++:

-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4  
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7  
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000  
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3  
-zopt -mllvm -unroll-threshold=100 -finline-aggressive  
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang

Benchmarks using Fortran, C, and C++:

-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4  
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7  
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000  
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3  
-zopt -mllvm -unroll-threshold=100 -finline-aggressive  
-mllvm -loop-unswitch-threshold=200000 -Kieee -Mrecursive  
-funroll-loops -mllvm -lsr-in-nested-loop  
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang

## Base Other Flags

C benchmarks:

-Wno-unused-command-line-argument

C++ benchmarks:

-Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

Benchmarks using both Fortran and C:

-Wno-unused-command-line-argument

Benchmarks using both C and C++:

-Wno-unused-command-line-argument

Benchmarks using Fortran, C, and C++:

-Wno-unused-command-line-argument



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Date:** Jan-2023

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Dec-2022

**Tested by:** Lenovo Global Technology

**Software Availability:** Nov-2022

## Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using both C and C++:

clang++ clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

```
519.lbm_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc
```

538.imagick\_r: Same as 519.lbm\_r

544.nab\_r: basepeak = yes

C++ benchmarks:

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_fp\_base = 1440

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Date:** Jan-2023

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Dec-2022

**Tested by:** Lenovo Global Technology

**Software Availability:** Nov-2022

## Peak Optimization Flags (Continued)

```
508.namd_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc
```

510.parest\_r: basepeak = yes

Fortran benchmarks:

503.bwaves\_r: basepeak = yes

549.fotonik3d\_r: basepeak = yes

```
554.roms_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm
-lamdalloc -lflang
```

Benchmarks using both Fortran and C:

521.wrf\_r: basepeak = yes

```
527.cam4_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -reduce-array-computations=3 -zopt
-Kieee -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-lflang
```

Benchmarks using both C and C++:

511.povray\_r: basepeak = yes

526.blender\_r: basepeak = yes

(Continued on next page)





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

## Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

```
-m64 -flt0 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-finline-aggressive -faggressive-loop-transform -fvector-transform
-fscalar-transform -Mrecursive -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang
```

## Peak Other Flags

C benchmarks:

-Wno-unused-command-line-argument

C++ benchmarks:

-Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

Benchmarks using both Fortran and C:

-Wno-unused-command-line-argument

Benchmarks using both C and C++:

-Wno-unused-command-line-argument

Benchmarks using Fortran, C, and C++:

-Wno-unused-command-line-argument

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

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Genoa-0.html>

<http://www.spec.org/cpu2017/flags/aocc400-flags.html>

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

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Genoa-0.xml>

<http://www.spec.org/cpu2017/flags/aocc400-flags.xml>



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SD665 V3  
(2.40 GHz,AMD EPYC 9654)

SPECrate®2017\_fp\_base = 1440

SPECrate®2017\_fp\_peak = 1440

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Jan-2023

**Hardware Availability:** Dec-2022

**Software Availability:** Nov-2022

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU®2017 v1.1.8 on 2023-01-01 10:54:31-0500.

Report generated on 2023-01-17 18:47:03 by CPU2017 PDF formatter v6442.

Originally published on 2023-01-17.