SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

$SPECrate^{®}2017\_fp\_base = 1480$

$SPECrate^{®}2017\_fp\_peak = 1550$
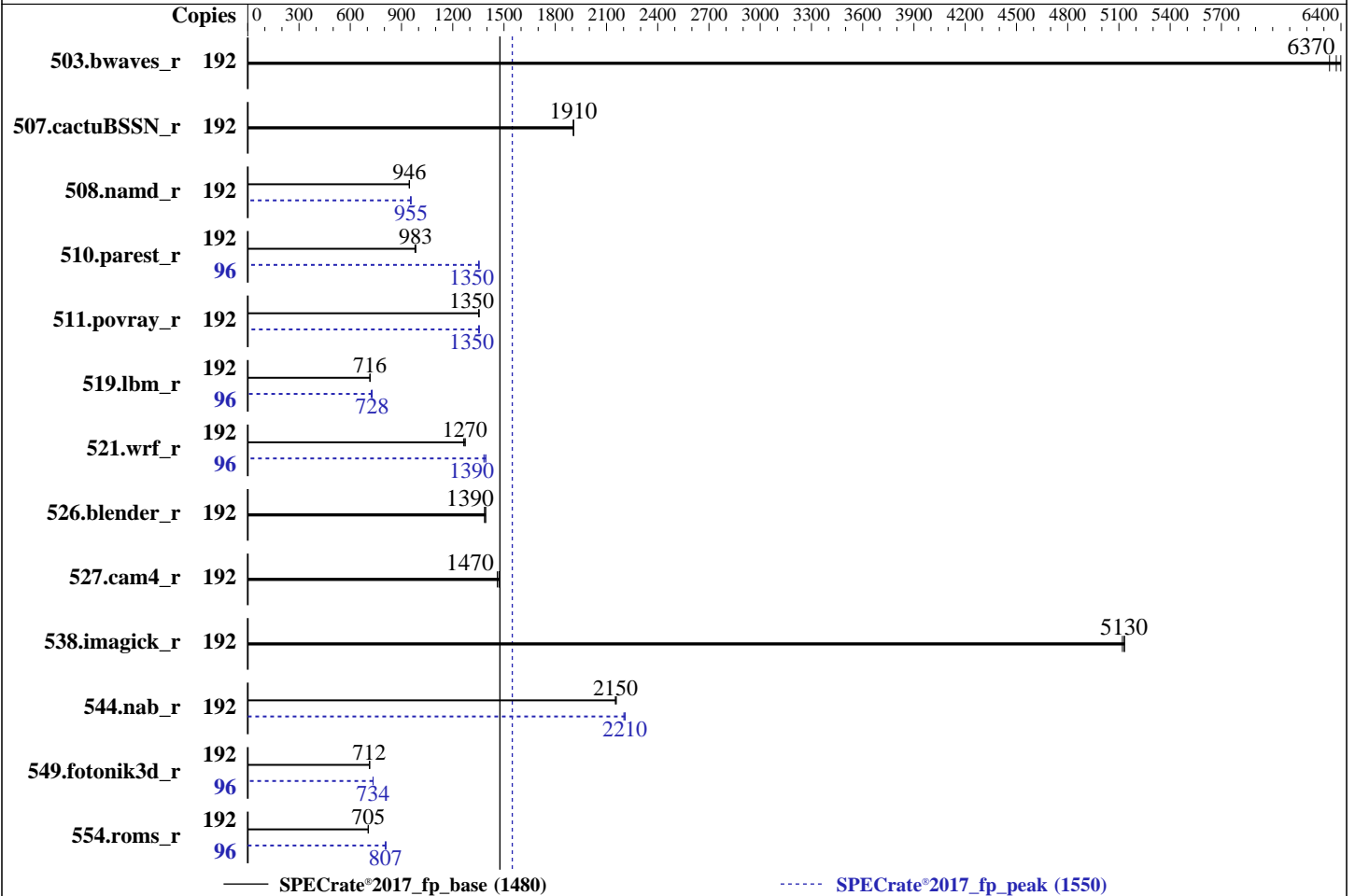
CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Benchmark	Copies	Base	Peak
503.bwaves_r	192	6370	
507.cactuBSSN_r	192	1910	
508.namd_r	192	946	955
510.parest_r	192 / 96	983	1350
511.povray_r	192	1350	1350
519.lbm_r	192 / 96	716	728
521.wrf_r	192 / 96	1270	1390
526.blender_r	192	1390	
527.cam4_r	192	1470	
538.imagick_r	192	5130	
544.nab_r	192	2150	2210
549.fotonik3d_r	192 / 96	712	734
554.roms_r	192 / 96	705	807

SPECrate®2017_fp_base (1480)   SPECrate®2017_fp_peak (1550)

Hardware

CPU Name: AMD EPYC 9455
 Max MHz: 4400
 Nominal: 3150
Enabled: 96 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 256 MB I+D on chip per chip,
 32 MB shared / 6 cores
 Other: None
Memory: 768 GB (24 x 32 GB 2Rx8 PC5-6400B-R, running at 6000)
Storage: 1 x 480 GB SATA SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6
 Kernel 6.4.0-150600.21-default
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
Parallel: No
Firmware: Lenovo BIOS Version KAE131I 5.30 released Dec-2024
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 2017-2025 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

CPU2017 License: 9017	**Test Date:** Jan-2025
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Feb-2025
Tested by: Lenovo Global Technology	**Software Availability:** Oct-2024

Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
503.bwaves_r	192	301	6400	304	6330	**302**	**6370**	192	301	6400	304	6330	**302**	**6370**
507.cactuBSSN_r	192	127	1910	128	1910	**128**	**1910**	192	127	1910	128	1910	**128**	**1910**
508.namd_r	192	193	947	193	945	**193**	**946**	192	**191**	**955**	191	956	191	953
510.parest_r	192	511	983	**511**	**983**	513	979	96	185	1350	**186**	**1350**	186	1350
511.povray_r	192	**332**	**1350**	331	1350	332	1350	192	331	1360	**331**	**1350**	332	1350
519.lbm_r	192	283	715	283	716	**283**	**716**	96	140	723	**139**	**728**	139	728
521.wrf_r	192	338	1270	340	1260	**338**	**1270**	96	154	1390	156	1380	**155**	**1390**
526.blender_r	192	210	1390	211	1390	**210**	**1390**	192	210	1390	211	1390	**210**	**1390**
527.cam4_r	192	**228**	**1470**	228	1470	230	1460	192	**228**	**1470**	228	1470	230	1460
538.imagick_r	192	**93.1**	**5130**	93.0	5130	93.3	5120	192	**93.1**	**5130**	93.0	5130	93.3	5120
544.nab_r	192	**150**	**2150**	150	2150	150	2160	192	147	2200	146	2210	**146**	**2210**
549.fotonik3d_r	192	**1050**	**712**	1048	714	1051	712	96	510	733	**510**	**734**	510	734
554.roms_r	192	432	706	**433**	**705**	433	705	96	189	809	**189**	**807**	189	806

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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.
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.

cpupower set to performance mode
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

$SPECrate^{®}2017\_fp\_base = 1480$

$SPECrate^{®}2017\_fp\_peak = 1550$

CPU2017 License:	9017	**Test Date:**	Jan-2025
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Feb-2025
Tested by:	Lenovo Global Technology	**Software Availability:**	Oct-2024

Operating System Notes (Continued)

```
cpupower frequency-set -r -g performance
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/cpu2017-1.1.9-amd-aocc500_znver5_A1.2/amd_rate_aocc500_znver5_A_lib/lib:/home/cpu2017-1.1.9-amd
     -aocc500_znver5_A1.2/amd_rate_aocc500_znver5_A_lib/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:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
P-State set to Enabled
NUMA Nodes per Socket set to NPS4
L1 Stride Prefetcher set to Disabled
ACPI SRAT L3 Cache as NUMA Domain set to Enabled

 Sysinfo program /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Wed Jan 22 09:34:13 2025

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

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
 12. Services, from systemctl list-unit-files
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Platform Notes (Continued)

```
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Disk information
 21. /sys/devices/virtual/dmi/id
 22. dmidecode
 23. BIOS
  ------------------------------------------------------------


  ------------------------------------------------------------
 1. uname -a
   Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
   x86_64 x86_64 x86_64 GNU/Linux


  ------------------------------------------------------------
 2. w
    09:34:13 up 4 min,  1 user,  load average: 0.24, 0.43, 0.24
   USER     TTY     FROM             LOGIN@   IDLE   JCPU   PCPU WHAT


  ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root


  ------------------------------------------------------------
 4. ulimit -a
   core file size          (blocks, -c) unlimited
   data seg size           (kbytes, -d) unlimited
   scheduling priority             (-e) 0
   file size               (blocks, -f) unlimited
   pending signals                 (-i) 3094018
   max locked memory       (kbytes, -l) 2097152
   max memory size         (kbytes, -m) unlimited
   open files                      (-n) 1024
   pipe size            (512 bytes, -p) 8
   POSIX message queues     (bytes, -q) 819200
   real-time priority              (-r) 0
   stack size              (kbytes, -s) unlimited
   cpu time               (seconds, -t) unlimited
   max user processes              (-u) 3094018
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited


  ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize=42
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root [priv]
  sshd: root@notty
  /bin/bash ./02.remote_local_SPECcpu_1.01.sh
  /bin/bash ./Run026-compliant-amd-ratefp.sh
  python3 ./run_amd_rate_aocc500_znver5_A1.py
  /bin/bash ./amd_rate_aocc500_znver5_A1.sh
  runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 fprate
  runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
    --runmode rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.028/templogs/preenv.fprate.028.0.log --lognum 028.0 --from_runcpu 2
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Platform Notes (Continued)

```
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2


 -------------------------------------------------------------
6. /proc/cpuinfo
    model name       : AMD EPYC 9455 48-Core Processor
    vendor_id        : AuthenticAMD
    cpu family       : 26
    model            : 2
    stepping         : 1
    microcode        : 0xb00211a
    bugs             : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size         : 192 4K pages
    cpu cores        : 48
    siblings         : 96
    2 physical ids (chips)
    192 processors (hardware threads)
    physical id 0: core ids 0-5,8-13,16-21,24-29,32-37,40-45,48-53,56-61
    physical id 1: core ids 0-5,8-13,16-21,24-29,32-37,40-45,48-53,56-61
    physical id 0: apicids 0-11,16-27,32-43,48-59,64-75,80-91,96-107,112-123
    physical id 1: apicids 128-139,144-155,160-171,176-187,192-203,208-219,224-235,240-251
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.


 -------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.39.3:
  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
  BIOS Vendor ID:          Advanced Micro Devices, Inc.
  Model name:              AMD EPYC 9455 48-Core Processor
  BIOS Model name:         AMD EPYC 9455 48-Core Processor          Unknown CPU @ 3.1GHz
  BIOS CPU family:         107
  CPU family:              26
  Model:                   2
  Thread(s) per core:      2
  Core(s) per socket:      48
  Socket(s):               2
  Stepping:                1
  Frequency boost:         enabled
  CPU(s) scaling MHz:      100%
  CPU max MHz:             3150.0000
  CPU min MHz:             1500.0000
  BogoMIPS:                6290.26
  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 amd_lbr_v2 nopl nonstop_tsc cpuid
                           extd_apicid aperfmperf 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 bpext
                           perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2
                           ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2
                           smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
```

(Continued on next page)

Lenovo Global Technology

SPECrate®2017_fp_base = 1480

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_peak = 1550

CPU2017 License: 9017		**Test Date:**	Jan-2025
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Feb-2025
Tested by:	Lenovo Global Technology	**Software Availability:**	Oct-2024

Platform Notes (Continued)

```
                        avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                        xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                        cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
                        xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                        nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                        pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi
                        avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                        avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid bus_lock_detect
                        movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                        flush_l1d debug_swap
  Virtualization:       AMD-V
  L1d cache:            4.5 MiB (96 instances)
  L1i cache:            3 MiB (96 instances)
  L2 cache:             96 MiB (96 instances)
  L3 cache:             512 MiB (16 instances)
  NUMA node(s):         16
  NUMA node0 CPU(s):    0-5,96-101
  NUMA node1 CPU(s):    6-11,102-107
  NUMA node2 CPU(s):    12-17,108-113
  NUMA node3 CPU(s):    18-23,114-119
  NUMA node4 CPU(s):    24-29,120-125
  NUMA node5 CPU(s):    30-35,126-131
  NUMA node6 CPU(s):    36-41,132-137
  NUMA node7 CPU(s):    42-47,138-143
  NUMA node8 CPU(s):    48-53,144-149
  NUMA node9 CPU(s):    54-59,150-155
  NUMA node10 CPU(s):   60-65,156-161
  NUMA node11 CPU(s):   66-71,162-167
  NUMA node12 CPU(s):   72-77,168-173
  NUMA node13 CPU(s):   78-83,174-179
  NUMA node14 CPU(s):   84-89,180-185
  NUMA node15 CPU(s):   90-95,186-191
  Vulnerability Gather data sampling:  Not affected
  Vulnerability Itlb multihit:         Not affected
  Vulnerability L1tf:                  Not affected
  Vulnerability Mds:                   Not affected
  Vulnerability Meltdown:              Not affected
  Vulnerability Mmio stale data:       Not affected
  Vulnerability Reg file data sampling: Not affected
  Vulnerability Retbleed:              Not affected
  Vulnerability Spec rstack overflow:  Not affected
  Vulnerability Spec store bypass:     Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:            Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:            Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                                       always-on; RSB filling; PBRSB-eIBRS Not affected; BHI Not affected
  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      48K     4.5M    12 Data            1     64     1           64
      L1i      32K       3M     8 Instruction     1     64     1           64
      L2        1M      96M    16 Unified         2   1024     1           64
      L3       32M     512M    16 Unified         3  32768     1           64


  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 16 nodes (0-15)
    node 0 cpus: 0-5,96-101
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

CPU2017 License:	9017	**Test Date:**	Jan-2025
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Feb-2025
Tested by:	Lenovo Global Technology	**Software Availability:**	Oct-2024

Platform Notes (Continued)

```
    node 0 size: 47958 MB
    node 0 free: 47641 MB
    node 1 cpus: 6-11,102-107
    node 1 size: 48342 MB
    node 1 free: 48037 MB
    node 2 cpus: 12-17,108-113
    node 2 size: 48380 MB
    node 2 free: 48085 MB
    node 3 cpus: 18-23,114-119
    node 3 size: 48380 MB
    node 3 free: 48069 MB
    node 4 cpus: 24-29,120-125
    node 4 size: 48380 MB
    node 4 free: 47777 MB
    node 5 cpus: 30-35,126-131
    node 5 size: 48380 MB
    node 5 free: 48109 MB
    node 6 cpus: 36-41,132-137
    node 6 size: 48380 MB
    node 6 free: 48108 MB
    node 7 cpus: 42-47,138-143
    node 7 size: 48380 MB
    node 7 free: 48125 MB
    node 8 cpus: 48-53,144-149
    node 8 size: 48380 MB
    node 8 free: 48126 MB
    node 9 cpus: 54-59,150-155
    node 9 size: 48380 MB
    node 9 free: 48130 MB
    node 10 cpus: 60-65,156-161
    node 10 size: 48380 MB
    node 10 free: 48137 MB
    node 11 cpus: 66-71,162-167
    node 11 size: 48380 MB
    node 11 free: 48167 MB
    node 12 cpus: 72-77,168-173
    node 12 size: 48380 MB
    node 12 free: 48103 MB
    node 13 cpus: 78-83,174-179
    node 13 size: 48380 MB
    node 13 free: 48106 MB
    node 14 cpus: 84-89,180-185
    node 14 size: 48380 MB
    node 14 free: 48152 MB
    node 15 cpus: 90-95,186-191
    node 15 size: 48281 MB
    node 15 free: 48029 MB
    node distances:
    node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
      0:  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
      1:  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
      2:  12  12  10  11  12  12  12  12  32  32  32  32  32  32  32  32
      3:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
      4:  12  12  12  12  10  11  12  12  32  32  32  32  32  32  32  32
      5:  12  12  12  12  11  10  12  12  32  32  32  32  32  32  32  32
      6:  12  12  12  12  12  12  10  11  32  32  32  32  32  32  32  32
      7:  12  12  12  12  12  12  11  10  32  32  32  32  32  32  32  32
      8:  32  32  32  32  32  32  32  32  10  11  12  12  12  12  12  12
      9:  32  32  32  32  32  32  32  32  11  10  12  12  12  12  12  12
     10:  32  32  32  32  32  32  32  32  12  12  10  11  12  12  12  12
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

Lenovo Global Technology

SPECrate®2017_fp_base = 1480

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_peak = 1550

CPU2017 License: 9017	**Test Date:** Jan-2025
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Feb-2025
Tested by: Lenovo Global Technology	**Software Availability:** Oct-2024

Platform Notes (Continued)

```
     11:  32  32  32  32  32  32  32  32  12  12  11  10  12  12  12  12
     12:  32  32  32  32  32  32  32  32  12  12  12  12  10  11  12  12
     13:  32  32  32  32  32  32  32  32  12  12  12  12  11  10  12  12
     14:  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11
     15:  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10

   --------------------------------------------------------------
   9. /proc/meminfo
     MemTotal:       792095608 kB


   --------------------------------------------------------------
   10. who -r
     run-level 3 Jan 22 09:30


   --------------------------------------------------------------
   11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
     Default Target  Status
     multi-user      running


   --------------------------------------------------------------
   12. Services, from systemctl list-unit-files
     STATE            UNIT FILES
     enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ irqbalance issue-generator
                      kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog sapconf smartd
                      sshd sysctl-logger systemd-pstore tuned wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
                      wickedd-nanny
     enabled-runtime  systemd-remount-fs
     disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                      chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                      firewalld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd issue-add-ssh-keys
                      kexec-load lunmask man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd
                      serial-getty@ smartd_generate_opts snmpd snmptrapd sysstat systemd-boot-check-no-failures
                      systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
                      systemd-timesyncd
     generated        ntp_sync
     indirect         systemd-userdbd uuidd wickedd


   --------------------------------------------------------------
   13. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
     root=UUID=36ce2ea9-ca92-4f5a-b22a-9bea62fad028
     splash=silent
     mitigations=auto
     quiet
     security=apparmor


   --------------------------------------------------------------
   14. cpupower frequency-info
     analyzing CPU 23:
       current policy: frequency should be within 1.50 GHz and 3.15 GHz.
                       The governor "performance" may decide which speed to use
                       within this range.
       boost state support:
         Supported: yes
         Active: yes


   --------------------------------------------------------------
   15. tuned-adm active
     Current active profile: virtual-host
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Platform Notes (Continued)

```
-------------------------------------------------------------
16. sysctl
  kernel.numa_balancing                1
  kernel.randomize_va_space            0
  vm.compaction_proactiveness          20
  vm.dirty_background_bytes            0
  vm.dirty_background_ratio            5
  vm.dirty_bytes                       0
  vm.dirty_expire_centisecs            3000
  vm.dirty_ratio                       8
  vm.dirty_writeback_centisecs         500
  vm.dirtytime_expire_seconds          43200
  vm.extfrag_threshold                 500
  vm.min_unmapped_ratio                1
  vm.nr_hugepages                      0
  vm.nr_hugepages_mempolicy            0
  vm.nr_overcommit_hugepages           0
  vm.swappiness                        1
  vm.watermark_boost_factor            15000
  vm.watermark_scale_factor            10
  vm.zone_reclaim_mode                 1


-------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage
  defrag          [always] defer defer+madvise madvise never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force


-------------------------------------------------------------
18. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
  defrag                  1
  max_ptes_none           511
  max_ptes_shared         256
  max_ptes_swap           64
  pages_to_scan           4096
  scan_sleep_millisecs    10000


-------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP6


-------------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda3      xfs   442G  109G  334G  25% /


-------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         Lenovo
    Product:        ThinkSystem SR645 V3
    Product Family: ThinkSystem
    Serial:         1234567890


-------------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.4 follows.  WARNING: Use caution when you interpret this section.
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Platform Notes (Continued)

```
   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:
     12x SK Hynix HMCG88AHBRA471N 32 GB 2 rank 6400, configured at 6000
     2x SK Hynix HMCG88AHBRA472N 32 GB 2 rank 6400, configured at 6000
     10x SK Hynix HMCG88AHBRA478N 32 GB 2 rank 6400, configured at 6000


   ------------------------------------------------------------
   23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       Lenovo
     BIOS Version:      KAE131I-5.30
     BIOS Date:         12/17/2024
     BIOS Revision:     5.30
     Firmware Revision: 54.6
```

Compiler Version Notes

```
==============================================================================================================
C              | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------


==============================================================================================================
C++            | 508.namd_r(base, peak) 510.parest_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------


==============================================================================================================
C++, C         | 511.povray_r(base, peak) 526.blender_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------


==============================================================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
```

(Continued on next page)

Lenovo Global Technology

SPECrate®2017_fp_base = 1480

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Compiler Version Notes (Continued)

```
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------

==============================================================================
Fortran        | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------

==============================================================================
Fortran, C     | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/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`

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

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`
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 -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=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

C++ benchmarks:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

CPU2017 License: 9017	**Test Date:**	Jan-2025
Test Sponsor: Lenovo Global Technology	**Hardware Availability:**	Feb-2025
Tested by: Lenovo Global Technology	**Software Availability:**	Oct-2024

Base Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-lflang -ldl
```

Benchmarks using both Fortran and C:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

Benchmarks using both C and C++:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -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
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
-ldl
```

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -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
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

Base Other Flags

C benchmarks:

```
-Wno-unused-command-line-argument
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Base Other Flags (Continued)

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
```

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
```

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Peak Optimization Flags

C benchmarks:

```
519.lbm_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

```
538.imagick_r: basepeak = yes
```

```
544.nab_r: -m64 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Ofast -march=znver5
-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 -ldl
```

C++ benchmarks:

```
508.namd_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

```
510.parest_r: -m64 -std=c++14 -flto -Wl,-mllvm -Wl,-suppress-fmas
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

Fortran benchmarks:

```
503.bwaves_r: basepeak = yes
```

```
549.fotonik3d_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Peak Optimization Flags (Continued)

549.fotonik3d_r (continued):
```
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -fvector-transform
-fscalar-transform -lamdlibm -lamdalloc -ldl -lflang
```

554.roms_r: `-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
```
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm
-lamdalloc -ldl -lflang
```

Benchmarks using both Fortran and C:

521.wrf_r: `-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
```
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-ldl -lflang
```

527.cam4_r: `basepeak = yes`

Benchmarks using both C and C++:

511.povray_r: `-m64 -std=c++14`
```
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -lamdlibm
-lamdalloc -ldl
```

526.blender_r: `basepeak = yes`

Benchmarks using Fortran, C, and C++:

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

Lenovo Global Technology

ThinkSystem SR645 V3
(3.15 GHz, AMD EPYC 9455)

SPECrate®2017_fp_base = 1480

SPECrate®2017_fp_peak = 1550

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Peak Optimization Flags (Continued)

507.cactuBSSN_r: `basepeak = yes`

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-Turin-E.html`
`http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.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-Turin-E.xml`
`http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml`

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

Tested with SPEC CPU®2017 v1.1.9 on 2025-01-21 20:34:13-0500.
Report generated on 2025-02-11 17:14:35 by CPU2017 PDF formatter v6716.
Originally published on 2025-02-11.