SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

SPECrate®2017_fp_base = 1570

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_peak = 1570

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

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

Benchmark	Copies	Base	Peak
503.bwaves_r	128	6650	
507.cactuBSSN_r	128	1950	
508.namd_r	128	1000	1000
510.parest_r	128	1440	
511.povray_r	128	1360	
519.lbm_r	128	794	
521.wrf_r	128	1420	1430
526.blender_r	128	1300	
527.cam4_r	128	1490	1490
538.imagick_r	128	5020	
544.nab_r	128	2100	2130
549.fotonik3d_r	128	736	736
554.roms_r	128	828	

SPECrate®2017_fp_base (1570) — SPECrate®2017_fp_peak (1570)

Hardware

CPU Name: AMD EPYC 9535
 Max MHz: 4300
 Nominal: 2400
Enabled: 128 cores, 2 chips
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,
 16 MB shared / 4 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: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

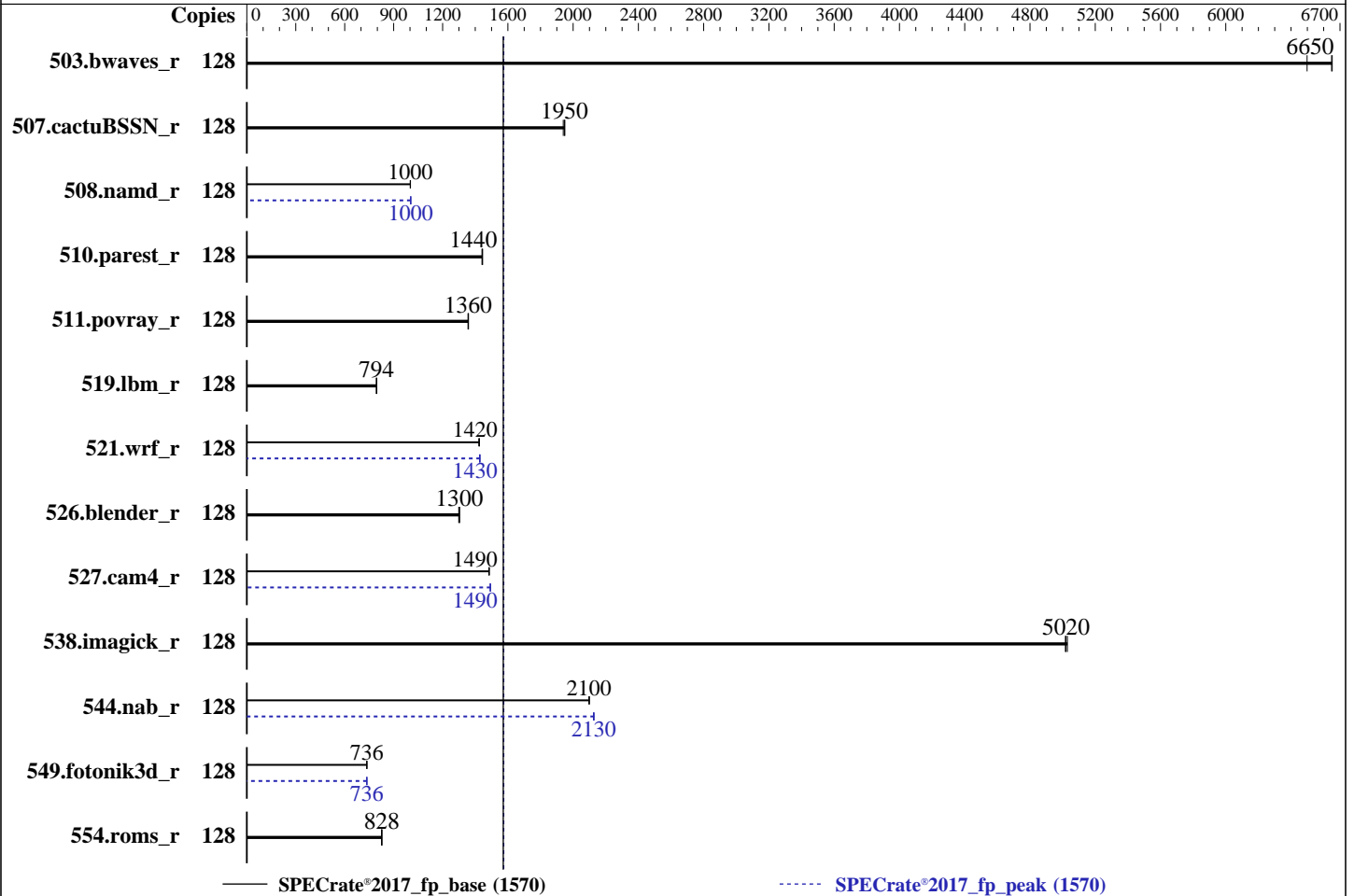|	
CPU2017 License: 9017	**Test Date:** Feb-2025
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Feb-2025
Tested by: Lenovo Global Technology	**Software Availability:** Oct-2024

Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	128	198	6500	**193**	**6650**	193	6650	128	198	6500	**193**	**6650**	193	6650
507.cactuBSSN_r	128	83.1	1950	83.6	1940	**83.2**	**1950**	128	83.1	1950	83.6	1940	**83.2**	**1950**
508.namd_r	128	121	1000	121	1000	**121**	**1000**	128	**121**	**1000**	121	1000	121	1000
510.parest_r	128	232	1440	232	1440	**232**	**1440**	128	232	1440	232	1440	**232**	**1440**
511.povray_r	128	220	1360	220	1360	**220**	**1360**	128	220	1360	220	1360	**220**	**1360**
519.lbm_r	128	170	794	169	797	**170**	**794**	128	170	794	169	797	**170**	**794**
521.wrf_r	128	**201**	**1420**	201	1430	202	1420	128	201	1430	201	1430	**201**	**1430**
526.blender_r	128	150	1300	150	1300	**150**	**1300**	128	150	1300	150	1300	**150**	**1300**
527.cam4_r	128	**151**	**1490**	151	1480	151	1490	128	150	1490	150	1490	**150**	**1490**
538.imagick_r	128	63.5	5020	63.3	5030	**63.4**	**5020**	128	63.5	5020	63.3	5030	**63.4**	**5020**
544.nab_r	128	**103**	**2100**	103	2100	103	2100	128	101	2120	**101**	**2130**	101	2130
549.fotonik3d_r	128	**678**	**736**	678	735	678	736	128	678	735	678	736	**678**	**736**
554.roms_r	128	246	825	246	828	**246**	**828**	128	246	825	246	828	**246**	**828**
SPECrate®2017_fp_base =	**1570**													
SPECrate®2017_fp_peak =	**1570**													

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.

To enable Transparent Hugepages (THP) for all allocations:
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

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

Operating System Notes (Continued)

```
'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
NUMA Nodes per Socket set to NPS4
L1 Stride Prefetcher set to Disabled
SMT Mode set to Disabled

 Sysinfo program /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Fri Feb  7 02:36:49 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
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

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

Platform Notes (Continued)

```
  16. /sys/kernel/mm/transparent_hugepage
  17. /sys/kernel/mm/transparent_hugepage/khugepaged
  18. OS release
  19. Disk information
  20. /sys/devices/virtual/dmi/id
  21. dmidecode
  22. 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
     02:36:49 up 4 min,  1 user,  load average: 0.14, 0.37, 0.20
    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) 3094040
    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) 3094040
    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/CPU2017.160/templogs/preenv.fprate.160.0.log --lognum 160.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2


  -------------------------------------------------------------
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Feb-2025

Hardware Availability: Feb-2025

Software Availability: Oct-2024

Platform Notes (Continued)

```
6. /proc/cpuinfo
    model name        : AMD EPYC 9535 64-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         : 64
    siblings          : 64
    2 physical ids (chips)
    128 processors (hardware threads)
    physical id 0: core ids
    0-3,16-19,32-35,48-51,64-67,80-83,96-99,112-115,128-131,144-147,160-163,176-179,192-195,208-211,224-227,2
    40-243
    physical id 1: core ids
    0-3,16-19,32-35,48-51,64-67,80-83,96-99,112-115,128-131,144-147,160-163,176-179,192-195,208-211,224-227,2
    40-243
    physical id 0: apicids
    0-3,16-19,32-35,48-51,64-67,80-83,96-99,112-115,128-131,144-147,160-163,176-179,192-195,208-211,224-227,2
    40-243
    physical id 1: apicids
    256-259,272-275,288-291,304-307,320-323,336-339,352-355,368-371,384-387,400-403,416-419,432-435,448-451,4
    64-467,480-483,496-499
  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):                 128
  On-line CPU(s) list:    0-127
  Vendor ID:              AuthenticAMD
  BIOS Vendor ID:         Advanced Micro Devices, Inc.
  Model name:             AMD EPYC 9535 64-Core Processor
  BIOS Model name:        AMD EPYC 9535 64-Core Processor              Unknown CPU @ 2.4GHz
  BIOS CPU family:        107
  CPU family:             26
  Model:                  2
  Thread(s) per core:     1
  Core(s) per socket:     64
  Socket(s):              2
  Stepping:               1
  BogoMIPS:               4792.69
  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 = 1570

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_peak = 1570

CPU2017 License:	9017	**Test Date:**	Feb-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:              6 MiB (128 instances)
    L1i cache:              4 MiB (128 instances)
    L2 cache:               128 MiB (128 instances)
    L3 cache:               512 MiB (32 instances)
    NUMA node(s):           8
    NUMA node0 CPU(s):      0-15
    NUMA node1 CPU(s):      16-31
    NUMA node2 CPU(s):      32-47
    NUMA node3 CPU(s):      48-63
    NUMA node4 CPU(s):      64-79
    NUMA node5 CPU(s):      80-95
    NUMA node6 CPU(s):      96-111
    NUMA node7 CPU(s):      112-127
    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
                                         disabled; 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       6M   12 Data            1    64      1           64
      L1i     32K       4M    8 Instruction     1    64      1           64
      L2       1M     128M   16 Unified         2  1024      1           64
      L3      16M     512M   16 Unified         3 16384      1           64

    --------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 8 nodes (0-7)
    node 0 cpus: 0-15
    node 0 size: 96344 MB
    node 0 free: 95905 MB
    node 1 cpus: 16-31
    node 1 size: 96763 MB
    node 1 free: 96438 MB
    node 2 cpus: 32-47
    node 2 size: 96763 MB
    node 2 free: 96393 MB
```

(Continued on next page)

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

Lenovo Global Technology

SPECrate®2017_fp_base = 1570

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_peak = 1570

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

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

Platform Notes (Continued)

```
   node 3 cpus: 48-63
   node 3 size: 96763 MB
   node 3 free: 96379 MB
   node 4 cpus: 64-79
   node 4 size: 96763 MB
   node 4 free: 96412 MB
   node 5 cpus: 80-95
   node 5 size: 96763 MB
   node 5 free: 96433 MB
   node 6 cpus: 96-111
   node 6 size: 96725 MB
   node 6 free: 96292 MB
   node 7 cpus: 112-127
   node 7 size: 96648 MB
   node 7 free: 96306 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  12  12  12  32  32  32  32
     1:  12  10  12  12  32  32  32  32
     2:  12  12  10  12  32  32  32  32
     3:  12  12  12  10  32  32  32  32
     4:  32  32  32  32  10  12  12  12
     5:  32  32  32  32  12  10  12  12
     6:  32  32  32  32  12  12  10  12
     7:  32  32  32  32  12  12  12  10


   ----------------------------------------------------------
   9. /proc/meminfo
     MemTotal:       792101084 kB


   ----------------------------------------------------------
   10. who -r
     run-level 3 Feb 7 02:33


   ----------------------------------------------------------
   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 smartd sshd
                      systemd-pstore 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 systemd-boot-check-no-failures
                      systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
                      systemd-timesyncd
     generated        ntp_sync
     indirect         systemd-userdbd wickedd


   ----------------------------------------------------------
   13. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
     root=UUID=7b8fe170-8cd6-4f33-a048-ee31798eab65
```

(Continued on next page)

Lenovo Global Technology

SPECrate®2017_fp_base = 1570

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_peak = 1570

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

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

Platform Notes (Continued)

```
    splash=silent
    mitigations=auto
    quiet
    security=apparmor

    -------------------------------------------------------------
14. cpupower frequency-info
    analyzing CPU 61:
      Unable to determine current policy
      boost state support:
        Supported: yes
        Active: yes

    -------------------------------------------------------------
15. sysctl
    kernel.numa_balancing            1
    kernel.randomize_va_space        0
    vm.compaction_proactiveness      20
    vm.dirty_background_bytes        0
    vm.dirty_background_ratio        10
    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

    -------------------------------------------------------------
16. /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

    -------------------------------------------------------------
17. /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

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

    -------------------------------------------------------------
19. Disk information
    SPEC is set to: /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

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

Platform Notes (Continued)

```
  Filesystem      Type   Size  Used Avail Use% Mounted on
  /dev/sda3       btrfs  444G  126G  315G  29% /home


   ----------------------------------------------------------
 20. /sys/devices/virtual/dmi/id
     Vendor:          Lenovo
     Product:         ThinkSystem SR665 V3
     Product Family:  ThinkSystem
     Serial:          1234567890


   ----------------------------------------------------------
 21. dmidecode
   Additional information from dmidecode 3.4 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:
     1x SK Hynix HMCG88AHBRA284N 32 GB 2 rank 6400, configured at 6000
     4x SK Hynix HMCG88AHBRA290N 32 GB 2 rank 6400, configured at 6000
     3x SK Hynix HMCG88AHBRA292N 32 GB 2 rank 6400, configured at 6000
     9x SK Hynix HMCG88AHBRA471N 32 GB 2 rank 6400, configured at 6000
     2x SK Hynix HMCG88AHBRA472N 32 GB 2 rank 6400, configured at 6000
     2x SK Hynix HMCG88AHBRA477N 32 GB 2 rank 6400, configured at 6000
     3x SK Hynix HMCG88AHBRA478N 32 GB 2 rank 6400, configured at 6000


   ----------------------------------------------------------
 22. 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)
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Feb-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
------------------------------------------------------------------------------

==============================================================================
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)
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++

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

Base Compiler Invocation (Continued)

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`
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
```

(Continued on next page)

Lenovo Global Technology

SPECrate®2017_fp_base = 1570

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_peak = 1570

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

Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-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
-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
```

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

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

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
```
-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
```

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
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

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

Peak Compiler Invocation (Continued)

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: basepeak = yes

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: basepeak = yes

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

Peak Optimization Flags (Continued)

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
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -fvector-transform
-fscalar-transform -lamdlibm -lamdalloc -ldl -lflang

554.roms_r: basepeak = yes

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: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -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 -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-ldl -lflang

Benchmarks using both C and C++:

511.povray_r: basepeak = yes

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.40 GHz, AMD EPYC 9535)

SPECrate®2017_fp_base = 1570

SPECrate®2017_fp_peak = 1570

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

Test Date: Feb-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 2025-02-06 13:36:49-0500.
Report generated on 2025-02-25 19:06:43 by CPU2017 PDF formatter v6716.
Originally published on 2025-02-25.