SPEC CPU®2017 Integer Rate Result

Epsylon IT Sp. z o.o.

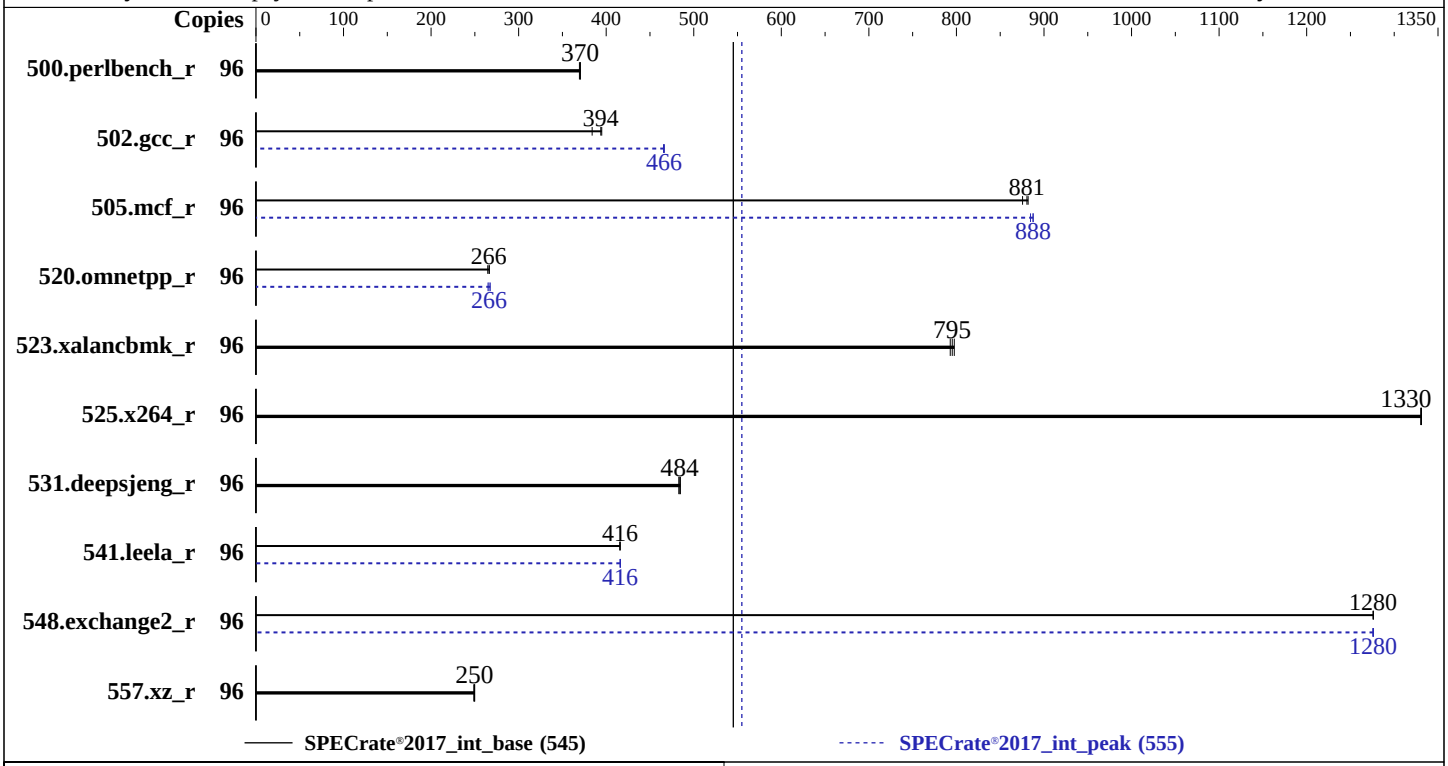
eterio 227 RH3 (2.50 GHz, AMD EPYC 9224)

SPECrate®2017_int_base = 545

SPECrate®2017_int_peak = 555

CPU2017 License: 9081
Test Sponsor: Epsylon IT Sp. z o.o.
Tested by: Epsylon IT Sp. z o.o.

Test Date: Mar-2026
Hardware Availability: Oct-2024
Software Availability: Feb-2026



Hardware

CPU Name:	AMD EPYC 9224
Max MHz:	3700
Nominal:	2500
Enabled:	48 cores, 2 chips, 2 threads/core
Orderable:	1,2 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	64 MB I+D on chip per chip, 16 MB shared / 6 cores
Other:	None
Memory:	1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 4800)
Storage:	1 x 1.92 TB SATA III SSD
Other:	CPU Cooling: Air

Software

OS:	Ubuntu 24.04.3 LTS Kernel 6.8.0-101-generic x86_64
Compiler:	C/C++/Fortran: Version 5.0.0 of AOCC
Parallel:	No
Firmware:	BIOS Version R17_F39 released Dec-2025
File System:	ext4
System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other:	None
Power Management:	BIOS and OS set to prefer performance at the cost of additional power usage.

SPEC CPU®2017 Integer Rate Result

Epsylon IT Sp. z o.o.

eterio 227 RH3 (2.50 GHz, AMD EPYC 9224)

SPECrate®2017_int_base = 545

SPECrate®2017_int_peak = 555

CPU2017 License: 9081
Test Sponsor: Epsylon IT Sp. z o.o.
Tested by: Epsylon IT Sp. z o.o.

Test Date: Mar-2026
Hardware Availability: Oct-2024
Software Availability: Feb-2026

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	96	414	369	**413**	**370**	413	370	96	414	369	**413**	**370**	413	370
502.gcc_r	96	**345**	**394**	344	395	354	384	96	292	466	292	465	**292**	**466**
505.mcf_r	96	**176**	**881**	176	882	177	876	96	175	885	**175**	**888**	175	888
520.omnetpp_r	96	**473**	**266**	476	265	472	267	96	**473**	**266**	471	268	475	265
523.xalancbmk_r	96	128	793	**127**	**795**	127	798	96	128	793	**127**	**795**	127	798
525.x264_r	96	**126**	**1330**	126	1330	126	1330	96	**126**	**1330**	126	1330	126	1330
531.deepsjeng_r	96	**227**	**484**	228	483	227	485	96	**227**	**484**	228	483	227	485
541.leela_r	96	382	416	382	416	**382**	**416**	96	382	416	**382**	**416**	382	416
548.exchange2_r	96	**197**	**1280**	197	1280	197	1280	96	197	1280	197	1280	**197**	**1280**
557.xz_r	96	415	250	417	249	**415**	**250**	96	415	250	417	249	**415**	**250**

SPECrate®2017_int_base = 545

SPECrate®2017_int_peak = 555

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
'sync; sysctl -w vm.drop_caches=3' was used to clear filesystem caches
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,
'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 =
     "/cpu2017-1.1.9/amd_rate_aocc500_znver5_A_lib/lib:/cpu2017-1.1.9/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 settings:
 SR-IOV Support = Enable
 SVM Mode = Enable
 NUMA nodes per socket = NPS4
 Determinism Control = Manual
 Determinism Enable = Power
 TDP Control = Manual
 TDP = 240
 PPT Control = Manual
 PPT = 240
 SMT Control = Enable

 BMC Configuration:
 Fan mode = Full speed mode


 Sysinfo program /cpu2017-1.1.9/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on sut Fri Mar  6 11:30:42 2026

 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 255 (255.4-1ubuntu8.12)
 12. Services, from systemctl list-unit-files
```

(Continued on next page)

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 sut 6.8.0-101-generic #101-Ubuntu SMP PREEMPT_DYNAMIC Mon Feb  9 10:15:05 UTC 2026 x86_64 x86_64
  x86_64 GNU/Linux

------------------------------------------------------------
2. w
   11:30:42 up 4 min,  1 user,  load average: 0.10, 0.20, 0.11
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU  WHAT
  root     tty1     -                11:26   18.00s  2.34s  0.22s /bin/bash ./amd_rate_aocc500_znver5_A1.sh

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

------------------------------------------------------------
4. ulimit -a
  time(seconds)        unlimited
  file(blocks)         unlimited
  data(kbytes)         unlimited
  stack(kbytes)        unlimited
  coredump(blocks)     unlimited
  memory(kbytes)       unlimited
  locked memory(kbytes) 2097152
  process              6189757
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 /bin/login -p --
 -bash
 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 intrate
 runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
   --runmode rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /cpu2017-1.1.9

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9224 24-Core Processor
```

(Continued on next page)

Platform Notes (Continued)

```
     vendor_id       : AuthenticAMD
     cpu family      : 25
     model           : 17
     stepping        : 1
     microcode       : 0xa101158
     bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso tsa vmscape
     TLB size        : 3584 4K pages
     cpu cores       : 24
     siblings        : 48
     2 physical ids (chips)
     96 processors (hardware threads)
     physical id 0: core ids 0-5,8-13,16-21,24-29
     physical id 1: core ids 0-5,8-13,16-21,24-29
     physical id 0: apicids 0-11,16-27,32-43,48-59
     physical id 1: apicids 64-75,80-91,96-107,112-123
   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):                               96
   On-line CPU(s) list:                  0-95
   Vendor ID:                            AuthenticAMD
   BIOS Vendor ID:                       Advanced Micro Devices, Inc.
   Model name:                           AMD EPYC 9224 24-Core Processor
   BIOS Model name:                      AMD EPYC 9224 24-Core Processor Unknown CPU @ 2.5GHz
   BIOS CPU family:                      107
   CPU family:                           25
   Model:                                17
   Thread(s) per core:                   2
   Core(s) per socket:                   24
   Socket(s):                            2
   Stepping:                             1
   Frequency boost:                      enabled
   CPU(s) scaling MHz:                   70%
   CPU max MHz:                          3707.5371
   CPU min MHz:                          1500.0000
   BogoMIPS:                             4999.78
   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 bmi1 avx2 smep bmi2 erms invpcid
                                         cqm rdt_a avx512f 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
                                         user_shstk avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd
                                         amd_ppin cppc amd_ibpb_ret arat npt lbrv svm_lock nrip_save
                                         tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
```

(Continued on next page)

Platform Notes (Continued)

```
                                    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
                                    overflow_recov succor smca fsrm flush_l1d debug_swap
                                    ibpb_exit_to_user
  Virtualization:                   AMD-V
  L1d cache:                        1.5 MiB (48 instances)
  L1i cache:                        1.5 MiB (48 instances)
  L2 cache:                         48 MiB (48 instances)
  L3 cache:                         128 MiB (8 instances)
  NUMA node(s):                     8
  NUMA node0 CPU(s):                0-5,48-53
  NUMA node1 CPU(s):                6-11,54-59
  NUMA node2 CPU(s):                12-17,60-65
  NUMA node3 CPU(s):                18-23,66-71
  NUMA node4 CPU(s):                24-29,72-77
  NUMA node5 CPU(s):                30-35,78-83
  NUMA node6 CPU(s):                36-41,84-89
  NUMA node7 CPU(s):                42-47,90-95
  Vulnerability Gather data sampling:      Not affected
  Vulnerability Indirect target selection: 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:      Mitigation; Safe RET
  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; PBRSB-eIBRS Not affected; BHI Not affected
  Vulnerability Srbds:                     Not affected
  Vulnerability Tsa:                       Mitigation; Clear CPU buffers
  Vulnerability Tsx async abort:           Not affected
  Vulnerability Vmscape:                   Mitigation; IBPB before exit to userspace

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
     L1d       32K     1.5M    8 Data            1    64        1             64
     L1i       32K     1.5M    8 Instruction     1    64        1             64
     L2         1M      48M    8 Unified         2  2048        1             64
     L3        16M     128M   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: 0-5,48-53
  node 0 size: 193188 MB
  node 0 free: 192727 MB
  node 1 cpus: 6-11,54-59
  node 1 size: 193531 MB
  node 1 free: 193102 MB
  node 2 cpus: 12-17,60-65
  node 2 size: 193531 MB
  node 2 free: 193166 MB
  node 3 cpus: 18-23,66-71
```

(Continued on next page)

Platform Notes (Continued)

```
  node 3 size: 193531 MB
  node 3 free: 192315 MB
  node 4 cpus: 24-29,72-77
  node 4 size: 193531 MB
  node 4 free: 193186 MB
  node 5 cpus: 30-35,78-83
  node 5 size: 193531 MB
  node 5 free: 192982 MB
  node 6 cpus: 36-41,84-89
  node 6 size: 193531 MB
  node 6 free: 193220 MB
  node 7 cpus: 42-47,90-95
  node 7 size: 193442 MB
  node 7 free: 193175 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:       1584968836 kB

------------------------------------------------------------
10. who -r
  run-level 5 Mar 6 11:26

------------------------------------------------------------
11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.12)
  Default Target  Status
  graphical       running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          apparmor apport blk-availability console-setup e2scrub_reap finalrd getty@ gpu-manager
                   grub-common grub-initrd-fallback keyboard-setup lvm2-monitor multipathd
                   networkd-dispatcher open-iscsi pollinate secureboot-db setvtrgb systemd-networkd
                   systemd-pstore systemd-resolved thermald ufw unattended-upgrades
  enabled-runtime  netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled         console-getty debug-shell ipmievd iscsid nftables numad serial-getty@ ssh
                   systemd-boot-check-no-failures systemd-confext systemd-network-generator
                   systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code
                   systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy
                   systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysext
                   systemd-time-wait-sync tuned upower
  generated        openipmi
  indirect         systemd-sysupdate systemd-sysupdate-reboot
  masked           cryptdisks cryptdisks-early hwclock multipath-tools-boot sudo systemd-networkd-wait-online
                   x11-common

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.8.0-101-generic
```

(Continued on next page)

Platform Notes (Continued)

```
  root=UUID=40338855-ed28-479d-9fce-40874beaefd7
  ro

------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 77:
    current policy: frequency should be within 1.50 GHz and 2.50 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes
      Boost States: 0
      Total States: 3
      Pstate-P0:  2500MHz

------------------------------------------------------------
15. tuned-adm active
  It seems that tuned daemon is not running, preset profile is not activated.
  Preset profile: throughput-performance

------------------------------------------------------------
16. 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

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

(Continued on next page)

Platform Notes (Continued)

```
------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release Ubuntu 24.04.3 LTS

------------------------------------------------------------
20. Disk information
SPEC is set to: /cpu2017-1.1.9
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda2      ext4  1.8T  145G  1.5T   9% /

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         Giga Computing
    Product:        eterio 227 RH3
    Product Family: Server
    Serial:         02600085

------------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.5 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:
    24x Samsung M321R8GA0PB2-CCPWF 64 GB 2 rank 6400, configured at 4800


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       GIGABYTE
   BIOS Version:      R17_F39
   BIOS Date:         12/23/2025
   BIOS Revision:     5.27
```

Compiler Version Notes

```
==============================================================================================================
C       | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_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       | 502.gcc_r(peak)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------------------------------------------------

========================================================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_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++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
        | 541.leela_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 | 548.exchange2_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
------------------------------------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang`

Base Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`

(Continued on next page)

Base Portability Flags (Continued)

502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_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
-Wl,-mllvm -Wl,-extra-inliner -z muldefs -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 -lflang
-lamdalloc-ext -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,-do-block-reorder=advanced -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang -lamdalloc-ext
-ldl

Fortran benchmarks:
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto
-fepilog-vectorization-of-inductions -mllvm -optimize-strided-mem-cost
-floop-transform -mllvm -unroll-aggressive -mllvm -unroll-threshold=500
-lamdlibm -lflang -lamdalloc -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`

Peak Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang`

Peak Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LINUX -DSPEC_LP64`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Peak Optimization Flags

C benchmarks:

500.perlbench_r: `basepeak = yes`

(Continued on next page)

Peak Optimization Flags (Continued)

502.gcc_r: `-m32 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather -Wl,-mllvm -Wl,-extra-inliner -z muldefs -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 -fgnu89-inline -lamdalloc`

505.mcf_r: `-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6 -Wl,-mllvm -Wl,-reduce-array-computations=3 -Wl,-mllvm -Wl,-extra-inliner -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 -lflang -lamdalloc-ext -ldl`

525.x264_r: `basepeak = yes`

557.xz_r: `basepeak = yes`

C++ benchmarks:

520.omnetpp_r: `-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6 -Wl,-mllvm -Wl,-reduce-array-computations=3 -Wl,-mllvm -Wl,-do-block-reorder=advanced -Ofast -march=znver5 -fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100 -mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie -fvirtual-function-elimination -fvisibility=hidden -mllvm -do-block-reorder=advanced -lamdlibm -lamdalloc-ext -ldl`

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6 -Wl,-mllvm -Wl,-reduce-array-computations=3 -Wl,-mllvm -Wl,-do-block-reorder=advanced -Ofast -march=znver5 -fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100 -mllvm -reduce-array-computations=3 -zopt -fno-PIE`

(Continued on next page)

Peak Optimization Flags (Continued)

541.leela_r (continued):
-no-pie -fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang
-lamdalloc-ext -ldl

Fortran benchmarks:
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver5 -fveclib=AMDLIBM
-ffast-math -flto -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc -ldl

Peak Other Flags

C benchmarks (except as noted below):
-Wno-unused-command-line-argument

502.gcc_r: -L/usr/lib32 -Wno-unused-command-line-argument
-L/home/work/cpu2017/v119/aocc5/1316/amd_rate_aocc500_znver5_A_lib/lib32

C++ benchmarks:
-Wno-unused-command-line-argument

Fortran benchmarks:
-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/aocc500-flags.2024-10-10.html
http://www.spec.org/cpu2017/flags/Epsylon-Platform-Flags-RevB-Mar-2026-For-AMD-Processors.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml
http://www.spec.org/cpu2017/flags/Epsylon-Platform-Flags-RevB-Mar-2026-For-AMD-Processors.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 2026-03-06 06:30:42-0500.
Report generated on 2026-03-25 10:08:33 by CPU2017 PDF formatter v6716.
Originally published on 2026-03-24.