SPEC CPU®2017 Integer Rate Result

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Dell Inc.

PowerEdge M7725 (AMD EPYC 9475F 48-Core Processor)

$SPECrate^{®}2017\_int\_base = 1420$

$SPECrate^{®}2017\_int\_peak = 1440$
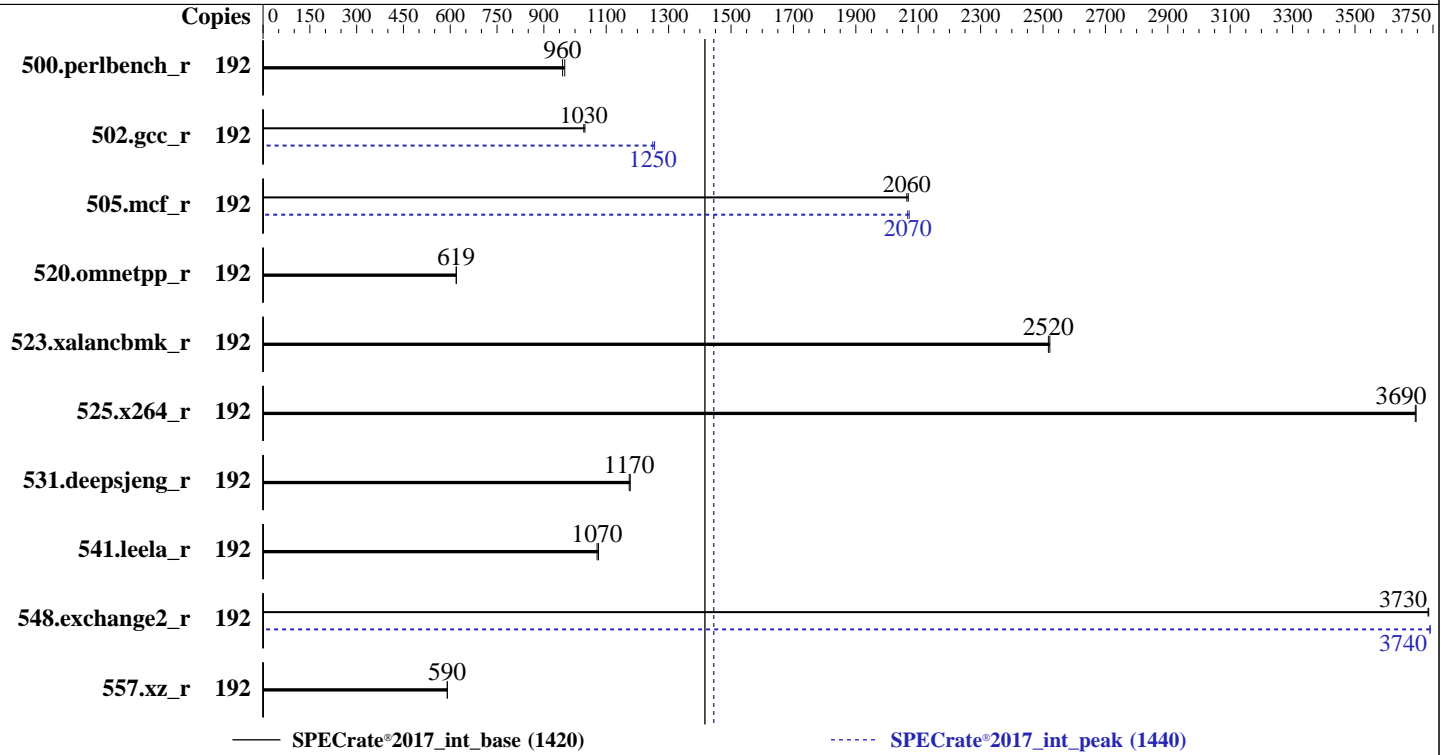
CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Mar-2025
Hardware Availability: Mar-2025
Software Availability: Feb-2025

Benchmark	Copies	Result
500.perlbench_r	192	960
502.gcc_r	192	1030 (base) / 1250 (peak)
505.mcf_r	192	2060 (base) / 2070 (peak)
520.omnetpp_r	192	619
523.xalancbmk_r	192	2520
525.x264_r	192	3690
531.deepsjeng_r	192	1170
541.leela_r	192	1070
548.exchange2_r	192	3730 (base) / 3740 (peak)
557.xz_r	192	590

—— SPECrate®2017_int_base (1420)   ------ SPECrate®2017_int_peak (1440)

Hardware

CPU Name: AMD EPYC 9475F
 Max MHz: 4800
 Nominal: 3650
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: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R)
Storage: 110 GB on tmpfs
Other: CPU Cooling: DLC

Software

OS: Ubuntu 24.04.2 LTS
 6.8.0-53-generic
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
Parallel: No
Firmware: Version 1.0.0 released Jan-2025
File System: tmpfs
System State: Run level 3 (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.

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Results Table

Benchmark	Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
500.perlbench_r	192	**318**	**960**	316	967			192	**318**	**960**	316	967		
502.gcc_r	192	263	1030	**264**	**1030**			192	217	1250	**218**	**1250**		
505.mcf_r	192	**150**	**2060**	150	2070			192	150	2070	**150**	**2070**		
520.omnetpp_r	192	**407**	**619**	407	619			192	**407**	**619**	407	619		
523.xalancbmk_r	192	**80.5**	**2520**	80.4	2520			192	**80.5**	**2520**	80.4	2520		
525.x264_r	192	91.0	3700	**91.0**	**3690**			192	91.0	3700	**91.0**	**3690**		
531.deepsjeng_r	192	187	1180	**187**	**1170**			192	187	1180	**187**	**1170**		
541.leela_r	192	**297**	**1070**	296	1080			192	**297**	**1070**	296	1080		
548.exchange2_r	192	135	3740	**135**	**3730**			192	134	3740	**134**	**3740**		
557.xz_r	192	**351**	**590**	351	591			192	**351**	**590**	351	591		

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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) only on request for base runs,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To enable THP for all allocations for peak runs,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Standard Performance Evaluation Corporation (info@spec.org)

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1/amd_rate_aocc500_znver5_A_lib/lib:/mnt/ramdisk/cpu2017-1
     .1.9-aocc500-znerv5_A1/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.


 Benchmark run from a 110 GB ramdisk created with the cmd: "mount -t tmpfs -o size=110G tmpfs /mnt/ramdisk"
```

Platform Notes

```
 BIOS Settings:
          Virtualization Technology : Disabled
              NUMA Nodes Per Socket : 4

                     System Profile : Custom
                           C-States : Disabled
                 Memory Patrol Scrub : Disabled
 PCI ASPM L1 Link Power Management : Disabled
    Periodic Directory Rinse Tuning : Blended
               Determinism Control : Manual
                Determinism Slider : Power Determinism
                     Optimizer Mode : Enabled
                 Adaptive Allocation : Enabled
                  Dram Refresh Delay : Performance
                  DIMM Self Healing -
     on Uncorrectable Memory Error : Disabled

 Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on M77251-M7725 Tue Mar  4 16:06:07 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
```

(Continued on next page)

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Platform Notes (Continued)

```
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.5)
 12. Services, from systemctl list-unit-files
 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 M772501-M7725 6.8.0-53-generic #55-Ubuntu SMP PREEMPT_DYNAMIC Fri Jan 17 15:37:52 UTC 2025 x86_64
  x86_64 x86_64 GNU/Linux

-----------------------------------------------------------
2. w
   16:06:07 up 19 min,  1 user,  load average: 0.11, 0.06, 0.02
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU  WHAT
  root     tty1     -                15:46   36.00s  1.11s  0.34s /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)     0
  memory(kbytes)       unlimited
  locked memory(kbytes) 2097152
  process              6189197
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

-----------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 /bin/login -p --
 -bash
 /bin/bash /home/DellFiles/bin/DELL_rate.sh
 /bin/bash /home/DellFiles/bin/dell-run-main.sh rate
 /bin/bash /home/DellFiles/bin/dell-run-main.sh rate
 /bin/bash /home/DellFiles/bin/AMD/dell-run-speccpu.sh rate --define DL-VERS=6.1a --output_format
   html,pdf,txt
 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 2 --define DL-BIOS-NPS=4
```

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Platform Notes (Continued)

```
    --define DL-VERS=6.1a --output_format html,pdf,txt intrate
 runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 2 --define
   DL-BIOS-NPS=4 --define DL-VERS=6.1a --output_format html,pdf,txt --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 = /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1


 ------------------------------------------------------------
 6. /proc/cpuinfo
     model name      : AMD EPYC 9475F 48-Core Processor
     vendor_id       : AuthenticAMD
     cpu family      : 26
     model           : 2
     stepping        : 1
     microcode       : 0xb00211e
     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:               AMD
  Model name:                   AMD EPYC 9475F 48-Core Processor
  BIOS Model name:              AMD EPYC 9475F 48-Core Processor          CPU @ 3.6GHz
  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:           76%
  CPU max MHz:                  4819.1401
  CPU min MHz:                  1500.0000
  BogoMIPS:                     7288.48
  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
```

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Platform Notes (Continued)

```
                        cmp_legacy 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 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 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 avx512_vp2intersect
                        flush_l1d debug_swap
  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):         8
  NUMA node0 CPU(s):    0-11,96-107
  NUMA node1 CPU(s):    12-23,108-119
  NUMA node2 CPU(s):    24-35,120-131
  NUMA node3 CPU(s):    36-47,132-143
  NUMA node4 CPU(s):    48-59,144-155
  NUMA node5 CPU(s):    60-71,156-167
  NUMA node6 CPU(s):    72-83,168-179
  NUMA node7 CPU(s):    84-95,180-191
  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: 8 nodes (0-7)
  node 0 cpus: 0-11,96-107
  node 0 size: 192786 MB
  node 0 free: 192127 MB
  node 1 cpus: 12-23,108-119
  node 1 size: 193482 MB
```

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Platform Notes (Continued)

```
   node 1 free: 188811 MB
   node 2 cpus: 24-35,120-131
   node 2 size: 193525 MB
   node 2 free: 193195 MB
   node 3 cpus: 36-47,132-143
   node 3 size: 193509 MB
   node 3 free: 193098 MB
   node 4 cpus: 48-59,144-155
   node 4 size: 193525 MB
   node 4 free: 193146 MB
   node 5 cpus: 60-71,156-167
   node 5 size: 193525 MB
   node 5 free: 193194 MB
   node 6 cpus: 72-83,168-179
   node 6 size: 193525 MB
   node 6 free: 193201 MB
   node 7 cpus: 84-95,180-191
   node 7 size: 193490 MB
   node 7 free: 193116 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:       1584509288 kB


  ------------------------------------------------------------
  10. who -r
    run-level 3 Mar 4 15:46


  ------------------------------------------------------------
  11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.5)
    Default Target  Status
    multi-user      running


  ------------------------------------------------------------
  12. Services, from systemctl list-unit-files
    STATE             UNIT FILES
    enabled           ModemManager apparmor apport blk-availability cloud-config cloud-final cloud-init
                      cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
                      grub-common grub-initrd-fallback keyboard-setup lm-sensors lvm2-monitor multipathd
                      networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb
                      sysstat systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved
                      systemd-timesyncd thermald tuned ua-reboot-cmds ubuntu-advantage udisks2 ufw vgauth
    enabled-runtime   netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
    disabled          console-getty debug-shell iscsid nftables rsync 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 upower
    indirect          systemd-sysupdate systemd-sysupdate-reboot uuidd
```

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Platform Notes (Continued)

```
   masked              cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

   ----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/vmlinuz-6.8.0-53-generic
   root=/dev/mapper/ubuntu--vg-ubuntu--lv
   ro

   ----------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 95:
     current policy: frequency should be within 1.50 GHz and 3.65 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:  3650MHz

   ----------------------------------------------------------
15. tuned-adm active
   Current active profile: latency-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        3
   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
```

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Platform Notes (Continued)

```
   max_ptes_swap             64
   pages_to_scan           4096
   scan_sleep_millisecs   10000


   ------------------------------------------------------------
  19. OS release
    From /etc/*-release /etc/*-version
    os-release Ubuntu 24.04.2 LTS


   ------------------------------------------------------------
  20. Disk information
  SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1
    Filesystem       Type   Size  Used Avail Use% Mounted on
    tmpfs           tmpfs  110G  3.3G  107G   3% /mnt/ramdisk


   ------------------------------------------------------------
  21. /sys/devices/virtual/dmi/id
      Vendor:         Dell Inc.
      Product:        PowerEdge M7725
      Product Family: PowerEdge
      Serial:         M772501


   ------------------------------------------------------------
  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:
      7x 802C0000802C MTC40F2046S1RC64BD1 64 GB 2 rank 6400
      9x 80AD000080AD HMCG94AHBRA277N 64 GB 2 rank 6400
      2x 80AD000080AD HMCG94AHBRA480N 64 GB 2 rank 6400
      6x 80CE000080CE M321R8GA0PB2-CCPKC 64 GB 2 rank 6400


   ------------------------------------------------------------
  23. BIOS
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:        Dell Inc.
    BIOS Version:       1.0.0
    BIOS Date:          01/23/2025
    BIOS Revision:      1.0
```

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)
```

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Dell Inc.

PowerEdge M7725 (AMD EPYC 9475F 48-Core Processor)

SPECrate®2017_int_base = 1420

SPECrate®2017_int_peak = 1440

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Mar-2025
Hardware Availability: Mar-2025
Software Availability: Feb-2025

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
------------------------------------------------------------------------------


==============================================================================
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++      | 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
```

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

SPEC CPU®2017 Integer Rate Result

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Dell Inc.

PowerEdge M7725 (AMD EPYC 9475F 48-Core Processor)

SPECrate®2017_int_base = 1420

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CPU2017 License: 6573		**Test Date:**	Mar-2025
Test Sponsor: Dell Inc.		**Hardware Availability:**	Mar-2025
Tested by: Dell Inc.		**Software Availability:**	Feb-2025

Base Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
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
```

SPEC CPU®2017 Integer Rate Result

2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M7725 (AMD EPYC 9475F 48-Core Processor)

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SPECrate®2017_int_peak = 1440

CPU2017 License: 6573
Test Sponsor: Dell Inc.
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Test Date: Mar-2025
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Software Availability: Feb-2025

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`

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Dell Inc.

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Tested by: Dell Inc.

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Software Availability: Feb-2025

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: basepeak = yes
```

```
523.xalancbmk_r: basepeak = yes
```

```
531.deepsjeng_r: basepeak = yes
```

```
541.leela_r: basepeak = yes
```

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
```

SPEC CPU®2017 Integer Rate Result

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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.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.8.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc500-flags.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.8.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 2025-03-04 11:06:07-0500.
Report generated on 2025-03-26 10:35:15 by CPU2017 PDF formatter v6716.
Originally published on 2025-03-25.