SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R6615 (AMD EPYC 9754 128-Core Processor)

SPECrate®2017_int_base =   932

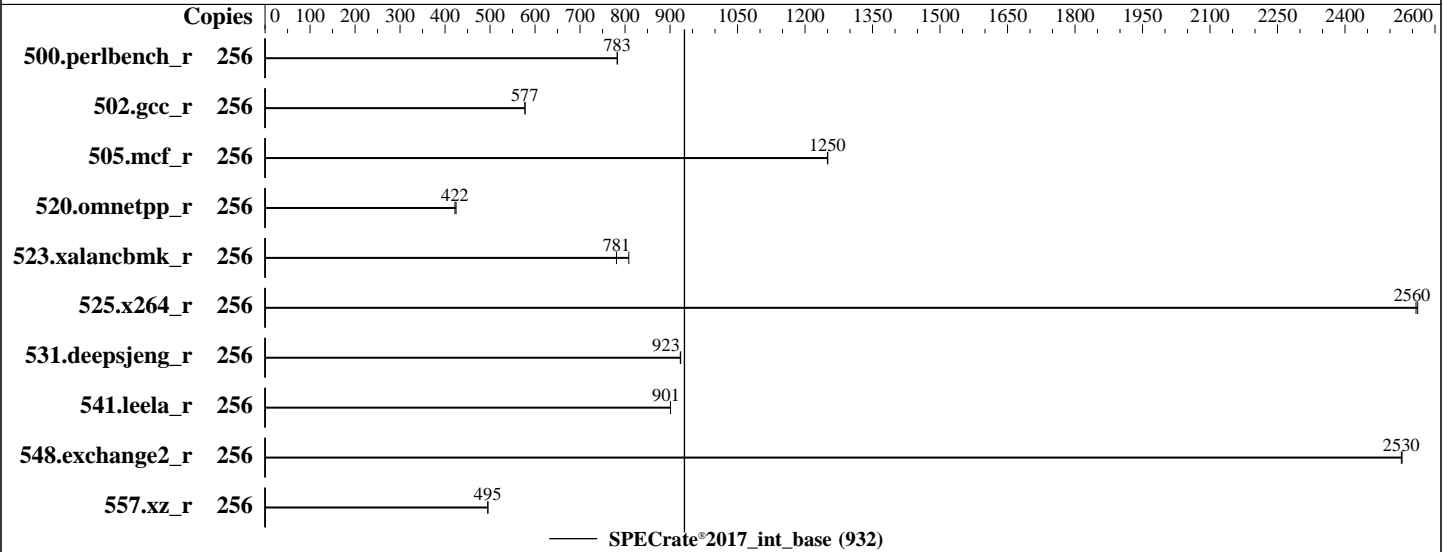SPECrate®2017_int_peak = Not Run

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

Test Date: Apr-2023
Hardware Availability: Jun-2023
Software Availability: Nov-2022

Benchmark	Copies	Result
500.perlbench_r	256	783
502.gcc_r	256	577
505.mcf_r	256	1250
520.omnetpp_r	256	422
523.xalancbmk_r	256	781
525.x264_r	256	2560
531.deepsjeng_r	256	923
541.leela_r	256	901
548.exchange2_r	256	2530
557.xz_r	256	495

SPECrate®2017_int_base (932)

Hardware

CPU Name: AMD EPYC 9754
 Max MHz: 3100
 Nominal: 2250
Enabled: 128 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 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 / 8 cores
 Other: None
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 130 GB on tmpfs
Other: None

Software

OS: Ubuntu 22.04.1 LTS
 5.15.0-46-generic
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 1.3.11 released Mar-2023
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
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	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	256	521	783	**521**	**783**									
502.gcc_r	256	**628**	**577**	627	578									
505.mcf_r	256	331	1250	**331**	**1250**									
520.omnetpp_r	256	791	424	**796**	**422**									
523.xalancbmk_r	256	334	808	**346**	**781**									
525.x264_r	256	175	2560	**175**	**2560**									
531.deepsjeng_r	256	318	924	**318**	**923**									
541.leela_r	256	470	901	**471**	**901**									
548.exchange2_r	256	265	2530	**266**	**2530**									
557.xz_r	256	**559**	**495**	558	495									
SPECrate®2017_int_base =				**932**										
SPECrate®2017_int_peak =				**Not Run**										

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)   https://www.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-aocc400-znver4-A1/amd_rate_aocc400_znver4_A_lib/lib:/mnt/ramdisk/cpu2017-1
     .1.9-aocc400-znver4-A1/amd_rate_aocc400_znver4_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 130 GB ramdisk created with the cmd: "mount -t tmpfs -o size=130G tmpfs /mnt/ramdisk"
```

Platform Notes

```
 BIOS settings:
             DRAM Refresh Delay : Performance
          DIMM Self Healing on
    Uncorrectable Memory Error : Disabled
      Virtualization Technology : Disabled
             NUMA Nodes per Socket : 4
        L3 Cache as NUMA Domain : Enabled

                 System Profile : Custom
            Memory Patrol Scrub : Disabled
           PCI ASPM L1 Link
                Power Management : Disabled
             Determinism Slider : Power Determinism

 Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc400-znver4-A1/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on amd-sut Fri Apr 28 04:55:24 2023

 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 249 (249.11-0ubuntu3.4)
```

(Continued on next page)

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Platform Notes (Continued)

```
   12. Failed units, from systemctl list-units --state=failed
   13. Services, from systemctl list-unit-files
   14. Linux kernel boot-time arguments, from /proc/cmdline
   15. cpupower frequency-info
   16. tuned-adm active
   17. sysctl
   18. /sys/kernel/mm/transparent_hugepage
   19. /sys/kernel/mm/transparent_hugepage/khugepaged
   20. OS release
   21. Disk information
   22. /sys/devices/virtual/dmi/id
   23. dmidecode
   24. BIOS
 -----------------------------------------------------------


 -----------------------------------------------------------
 1. uname -a
   Linux amd-sut 5.15.0-46-generic #49-Ubuntu SMP Thu Aug 4 18:03:25 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux


 -----------------------------------------------------------
 2. w
    04:55:24 up 13:36,  1 user,  load average: 0.24, 0.07, 0.02
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                Thu15   20.00s  3.18s  0.74s /bin/bash ./amd_rate_aocc400_znver4_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              3093704
   nofiles              1024
   vmemory(kbytes)      unlimited
   locks                unlimited
   rtprio               0


 -----------------------------------------------------------
 5. sysinfo process ancestry
  /sbin/init
  /bin/login -p --
  -bash
  /bin/bash ./DELL_rate.sh
  /bin/bash ./dell-run-main.sh rate
  /bin/bash ./dell-run-main.sh rate
  /bin/bash ./dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_EPYC-4.inc --define DL-BIOS-adddcD=1
    --define DL-BIOS-VirtD=1 --define DL-VERS=v4.5 --output_format html,pdf,txt
  python3 ./run_amd_rate_aocc400_znver4_A1.py
  /bin/bash ./amd_rate_aocc400_znver4_A1.sh
  runcpu --config amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 2 --define
    DL-BIOSinc=Dell-BIOS_EPYC-4.inc --define DL-BIOS-adddcD=1 --define DL-BIOS-VirtD=1 --define DL-VERS=v4.5
    --output_format html,pdf,txt intrate
  runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 2 --define
```

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Platform Notes (Continued)

```
    DL-BIOSinc=Dell-BIOS_EPYC-4.inc --define DL-BIOS-adddcD=1 --define DL-BIOS-VirtD=1 --define DL-VERS=v4.5
    --output_format html,pdf,txt --nopower --runmode rate --tune base --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-aocc400-znver4-A1


  -------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9754 128-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 25
    model           : 160
    stepping        : 2
    microcode       : 0xaa00205
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size        : 3584 4K pages
    cpu cores       : 128
    siblings        : 256
    1 physical ids (chips)
    256 processors (hardware threads)
    physical id 0: core ids 0-127
    physical id 0: apicids 0-255
  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 2.37.2:
  Architecture:                 x86_64
  CPU op-mode(s):               32-bit, 64-bit
  Address sizes:                52 bits physical, 57 bits virtual
  Byte Order:                   Little Endian
  CPU(s):                       256
  On-line CPU(s) list:          0-255
  Vendor ID:                    AuthenticAMD
  Model name:                   AMD EPYC 9754 128-Core Processor
  CPU family:                   25
  Model:                        160
  Thread(s) per core:           2
  Core(s) per socket:           128
  Socket(s):                    1
  Stepping:                     2
  Frequency boost:              enabled
  CPU max MHz:                  3101.0000
  CPU min MHz:                  400.0000
  BogoMIPS:                     4501.05
  Flags:                        fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                                clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
                                constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid 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
                                invpcid_single hw_pstate ssbd mba ibrs ibpb stibp 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
                                avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt
```

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Platform Notes (Continued)

```
                                lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
                                pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi
                                umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                                avx512_vpopcntdq la57 rdpid overflow_recov succor smca fsrm flush_l1d
  Virtualization:               AMD-V
  L1d cache:                    4 MiB (128 instances)
  L1i cache:                    4 MiB (128 instances)
  L2 cache:                     128 MiB (128 instances)
  L3 cache:                     256 MiB (16 instances)
  NUMA node(s):                 16
  NUMA node0 CPU(s):            0-7,128-135
  NUMA node1 CPU(s):            8-15,136-143
  NUMA node2 CPU(s):            64-71,192-199
  NUMA node3 CPU(s):            72-79,200-207
  NUMA node4 CPU(s):            32-39,160-167
  NUMA node5 CPU(s):            40-47,168-175
  NUMA node6 CPU(s):            96-103,224-231
  NUMA node7 CPU(s):            104-111,232-239
  NUMA node8 CPU(s):            48-55,176-183
  NUMA node9 CPU(s):            56-63,184-191
  NUMA node10 CPU(s):           112-119,240-247
  NUMA node11 CPU(s):           120-127,248-255
  NUMA node12 CPU(s):           16-23,144-151
  NUMA node13 CPU(s):           24-31,152-159
  NUMA node14 CPU(s):           80-87,208-215
  NUMA node15 CPU(s):           88-95,216-223
  Vulnerability Itlb multihit:  Not affected
  Vulnerability L1tf:           Not affected
  Vulnerability Mds:            Not affected
  Vulnerability Meltdown:       Not affected
  Vulnerability Mmio stale data: Not affected
  Vulnerability Retbleed:       Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
  Vulnerability Spectre v1:     Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:     Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, RSB
                                filling
  Vulnerability Srbds:          Not affected
  Vulnerability Tsx async abort: Not affected

 From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
     L1d      32K       4M   8 Data            1    64       1               64
     L1i      32K       4M   8 Instruction     1    64       1               64
     L2        1M      128M   8 Unified         2  2048       1               64
     L3       16M      256M  16 Unified         3 16384       1               64

     --------------------------------------------------------
 8. numactl --hardware
 NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 16 nodes (0-15)
   node 0 cpus: 0-7,128-135
   node 0 size: 47926 MB
   node 0 free: 47567 MB
   node 1 cpus: 8-15,136-143
   node 1 size: 48380 MB
   node 1 free: 48080 MB
   node 2 cpus: 64-71,192-199
   node 2 size: 48380 MB
   node 2 free: 48084 MB
   node 3 cpus: 72-79,200-207
```

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Platform Notes (Continued)

```
   node 3 size: 48378 MB
   node 3 free: 48064 MB
   node 4 cpus: 32-39,160-167
   node 4 size: 48380 MB
   node 4 free: 48047 MB
   node 5 cpus: 40-47,168-175
   node 5 size: 48380 MB
   node 5 free: 48129 MB
   node 6 cpus: 96-103,224-231
   node 6 size: 48380 MB
   node 6 free: 48082 MB
   node 7 cpus: 104-111,232-239
   node 7 size: 48378 MB
   node 7 free: 44575 MB
   node 8 cpus: 48-55,176-183
   node 8 size: 48380 MB
   node 8 free: 48091 MB
   node 9 cpus: 56-63,184-191
   node 9 size: 48380 MB
   node 9 free: 48134 MB
   node 10 cpus: 112-119,240-247
   node 10 size: 48344 MB
   node 10 free: 48098 MB
   node 11 cpus: 120-127,248-255
   node 11 size: 48378 MB
   node 11 free: 48119 MB
   node 12 cpus: 16-23,144-151
   node 12 size: 48380 MB
   node 12 free: 48044 MB
   node 13 cpus: 24-31,152-159
   node 13 size: 48380 MB
   node 13 free: 48070 MB
   node 14 cpus: 80-87,208-215
   node 14 size: 48380 MB
   node 14 free: 48103 MB
   node 15 cpus: 88-95,216-223
   node 15 size: 48331 MB
   node 15 free: 48058 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
     0:  10  11  11  11  12  12  12  12  12  12  12  12  12  12  12  12
     1:  11  10  11  11  12  12  12  12  12  12  12  12  12  12  12  12
     2:  11  11  10  11  12  12  12  12  12  12  12  12  12  12  12  12
     3:  11  11  11  10  12  12  12  12  12  12  12  12  12  12  12  12
     4:  12  12  12  12  10  11  11  11  12  12  12  12  12  12  12  12
     5:  12  12  12  12  11  10  11  11  12  12  12  12  12  12  12  12
     6:  12  12  12  12  11  11  10  11  12  12  12  12  12  12  12  12
     7:  12  12  12  12  11  11  11  10  12  12  12  12  12  12  12  12
     8:  12  12  12  12  12  12  12  12  10  11  11  11  12  12  12  12
     9:  12  12  12  12  12  12  12  12  11  10  11  11  12  12  12  12
    10:  12  12  12  12  12  12  12  12  11  11  10  11  12  12  12  12
    11:  12  12  12  12  12  12  12  12  11  11  11  10  12  12  12  12
    12:  12  12  12  12  12  12  12  12  12  12  12  12  10  11  11  11
    13:  12  12  12  12  12  12  12  12  12  12  12  12  11  10  11  11
    14:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  10  11
    15:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  11  10


   ------------------------------------------------------------
   9. /proc/meminfo
      MemTotal:        792102320 kB
```

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Platform Notes (Continued)

```
----------------------------------------------------------
10. who -r
  run-level 3 Apr 27 15:20


----------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.4)
  Default Target  Status
  multi-user      degraded


----------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
    UNIT                            LOAD   ACTIVE SUB    DESCRIPTION
  * systemd-networkd-wait-online.service loaded failed failed Wait for Network to be Configured


----------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE             UNIT FILES
  enabled           blk-availability console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
                    grub-common grub-initrd-fallback irqbalance keyboard-setup lm-sensors networkd-dispatcher
                    open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb ssh systemd-networkd
                    systemd-pstore systemd-resolved systemd-timesyncd thermald tuned ua-reboot-cmds
                    ubuntu-advantage udisks2 vgauth wpa_supplicant
  enabled-runtime   netplan-ovs-cleanup systemd-fsck-root systemd-networkd-wait-online systemd-remount-fs
  disabled          ModemManager apparmor console-getty debug-shell iscsid lvm2-monitor lxd-agent multipathd
                    nftables rsync serial-getty@ systemd-boot-check-no-failures systemd-network-generator
                    systemd-sysext systemd-time-wait-sync ufw upower wpa_supplicant-nl80211@
                    wpa_supplicant-wired@ wpa_supplicant@
  generated         apport
  indirect          uuidd
  masked            NetworkManager NetworkManager-dispatcher NetworkManager-wait-online cryptdisks
                    cryptdisks-early hwclock lvm2 multipath-tools-boot rc rcS screen-cleanup sudo x11-common


----------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-5.15.0-46-generic
  root=UUID=593ab29a-c8fe-4d75-821a-b60d5c945311
  ro


----------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 400 MHz and 3.10 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:  2250MHz


----------------------------------------------------------
16. tuned-adm active
  Current active profile: latency-performance


----------------------------------------------------------
17. sysctl
  kernel.numa_balancing              1
  kernel.randomize_va_space          0
```

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Platform Notes (Continued)

```
  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


  --------------------------------------------------------------
18. /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


  --------------------------------------------------------------
19. /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


  --------------------------------------------------------------
20. OS release
  From /etc/*-release /etc/*-version
  os-release Ubuntu 22.04.1 LTS


  --------------------------------------------------------------
21. Disk information
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc400-znver4-A1
  Filesystem      Type   Size  Used Avail Use% Mounted on
  tmpfs          tmpfs  130G  3.5G  127G   3% /mnt/ramdisk


  --------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
    Vendor:        Dell Inc.
    Product:       PowerEdge R6615
    Product Family: PowerEdge
    Serial:        GLM4030


  --------------------------------------------------------------
23. dmidecode
  Additional information from dmidecode 3.3 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:
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R6615 (AMD EPYC 9754 128-Core Processor)

SPECrate®2017_int_base =   932

SPECrate®2017_int_peak = Not Run

CPU2017 License: 6573		**Test Date:**	Apr-2023
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Jun-2023
Tested by:	Dell Inc.	**Software Availability:**	Nov-2022

Platform Notes (Continued)

```
    12x 80AD000080AD HMCG94MEBRA109N 64 GB 2 rank 4800


  -----------------------------------------------------------
  24. BIOS
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:         Dell Inc.
    BIOS Version:        1.3.11
    BIOS Date:           03/31/2023
    BIOS Revision:       1.3
```

Compiler Version Notes

```
==============================================================================
C        | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
C++      | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

SPEC CPU®2017 Integer Rate Result

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Tested by: Dell Inc.

Test Date: Apr-2023
Hardware Availability: Jun-2023
Software Availability: Nov-2022

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

C++ benchmarks:
```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -z muldefs -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm -lflang
-lamdalloc-ext
```

Fortran benchmarks:
```
-m64 -flto -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=znver4
-fveclib=AMDLIBM -ffast-math -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc
```

SPEC CPU®2017 Integer Rate Result

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Base Other Flags

C benchmarks:

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

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/aocc400-flags.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.1.html
```

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

```
http://www.spec.org/cpu2017/flags/aocc400-flags.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.1.xml
```

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

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