SPEC CPU®2017 Integer Rate Result

Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)
(3.10 GHz, AMD EPYC 9554)

$SPECrate^{®}2017\_int\_base = 1140$

$SPECrate^{®}2017\_int\_peak = 1210$

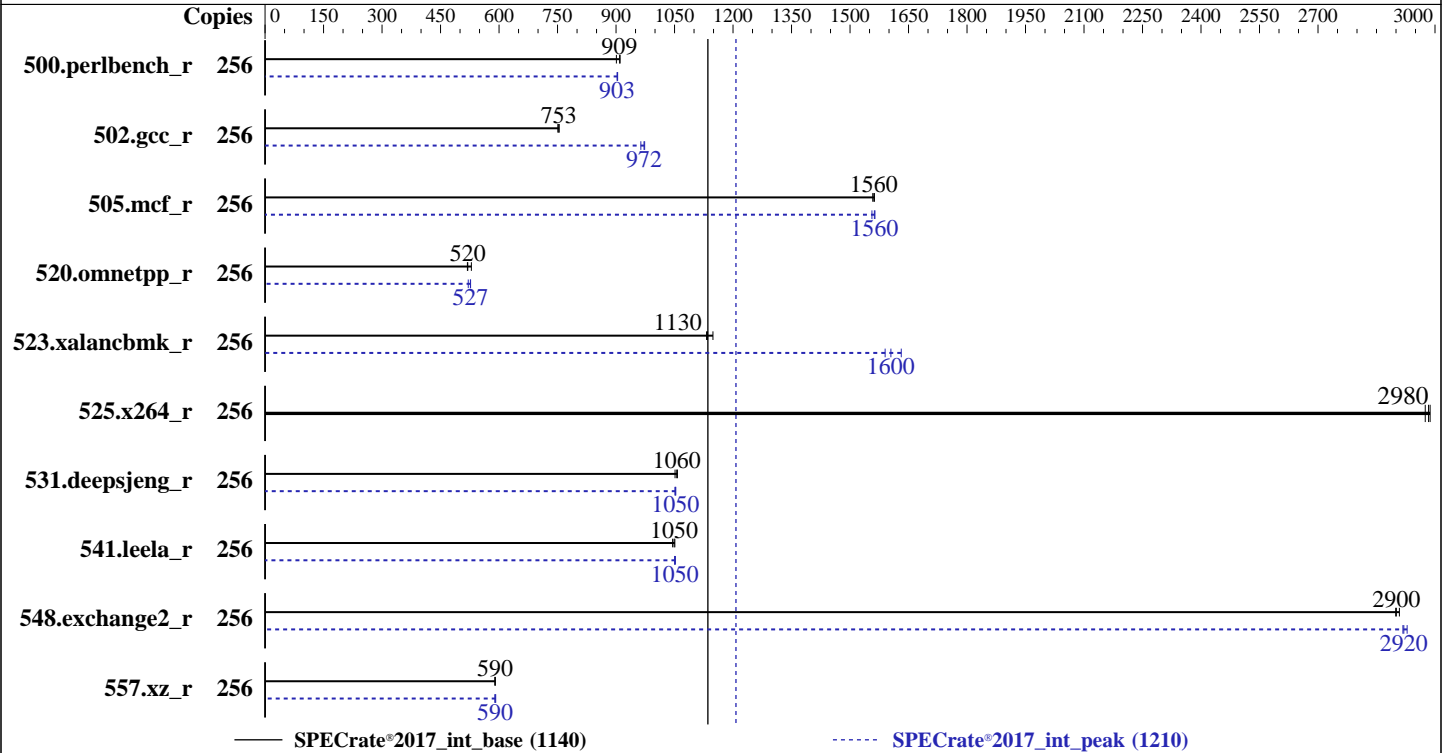**CPU2017 License:** 6802

Test Sponsor: Netweb Technologies India Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jun-2023

Software Availability: Aug-2024

Benchmark	Copies	base	peak
500.perlbench_r	256	909	903
502.gcc_r	256	753	972
505.mcf_r	256	1560	1560
520.omnetpp_r	256	520	527
523.xalancbmk_r	256	1130	1600
525.x264_r	256	2980	
531.deepsjeng_r	256	1060	1050
541.leela_r	256	1050	1050
548.exchange2_r	256	2900	2920
557.xz_r	256	590	590

SPECrate®2017_int_base (1140) ——— SPECrate®2017_int_peak (1210) - - - - -

Hardware

CPU Name: AMD EPYC 9554
  Max MHz: 3750
  Nominal: 3100
Enabled: 256 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: 256 MB I+D on chip per chip, 32 MB shared / 8 cores
  Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 1 TB NVMe
Other: CPU Cooling: Air

Software

OS: Ubuntu 20.04.4 LTS
  kernel version
  5.15.0-119-generic
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 1.9a released Jun-2024
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage.

https://www.spec.org/

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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	448	910	452	901	**448**	**909**	256	**451**	**903**	451	904	451	903
502.gcc_r	256	**481**	**753**	483	751	481	754	256	**373**	**972**	372	973	376	964
505.mcf_r	256	265	1560	**265**	**1560**	265	1560	256	**265**	**1560**	265	1560	266	1560
520.omnetpp_r	256	635	529	647	519	**646**	**520**	256	**638**	**527**	637	527	645	521
523.xalancbmk_r	256	239	1130	**238**	**1130**	235	1150	256	166	1630	**168**	**1600**	170	1590
525.x264_r	256	150	2990	151	2970	**150**	**2980**	256	150	2990	151	2970	**150**	**2980**
531.deepsjeng_r	256	279	1050	**278**	**1060**	277	1060	256	**279**	**1050**	279	1050	279	1050
541.leela_r	256	403	1050	406	1050	**404**	**1050**	256	403	1050	404	1050	**404**	**1050**
548.exchange2_r	256	231	2900	**231**	**2900**	231	2910	256	230	2920	**230**	**2920**	229	2930
557.xz_r	256	**469**	**590**	468	590	469	590	256	**468**	**590**	469	589	467	591
SPECrate®2017_int_base =	**1140**													
SPECrate®2017_int_peak =	**1210**													

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.
```

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/cpu2017/amd_rate_aocc400_znver4_A_lib/lib:/home/cpu2017/amd_rate_aocc400_znver4_A_lib/lib32:"
MALLOC_CONF = "retain:true"

Environment variables set by runcpu during the 523.xalancbmk_r peak run:
MALLOC_CONF = "thp:never"
```

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:
cTDP: 400
Determinism Slider set to Power
Package Power: 400
EDC: 400
ACPI SRAT L3 Cache as NUMA Domain: enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on amd2-Super-Server Sat Aug 31 12:11:12 2024

 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 245 (245.4-4ubuntu3.20)
 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. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
```

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Platform Notes (Continued)

```
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
   -----------------------------------------------------------

   -----------------------------------------------------------
 1. uname -a
   Linux amd2-Super-Server 5.15.0-119-generic #129~20.04.1-Ubuntu SMP Wed Aug 7 13:07:13 UTC 2024 x86_64
   x86_64 x86_64 GNU/Linux

   -----------------------------------------------------------
 2. w
    12:11:12 up 1 min,  1 user,  load average: 0.66, 0.37, 0.14
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                11:59    6.00s  2.24s  0.71s /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              4126531
   nofiles              1024
   vmemory(kbytes)      unlimited
   locks                unlimited
   rtprio               0

   -----------------------------------------------------------
 5. sysinfo process ancestry
  /sbin/init splash
  /bin/login -p --
  -bash
  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 all --reportable --iterations 3 intrate
  runcpu --configfile amd_rate_aocc400_znver4_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 = /home/cpu2017

   -----------------------------------------------------------
 6. /proc/cpuinfo
    model name       : AMD EPYC 9554 64-Core Processor
    vendor_id        : AuthenticAMD
    cpu family       : 25
    model            : 17
    stepping         : 1
    microcode        : 0xa101148
    bugs             : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
    TLB size         : 3584 4K pages
    cpu cores        : 64
```

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Platform Notes (Continued)

```
    siblings        : 128
    2 physical ids (chips)
    256 processors (hardware threads)
    physical id 0: core ids 0-63
    physical id 1: core ids 0-63
    physical id 0: apicids 0-127
    physical id 1: apicids 128-255
  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 2.34:
  Architecture:               x86_64
  CPU op-mode(s):             32-bit, 64-bit
  Byte Order:                 Little Endian
  Address sizes:              52 bits physical, 57 bits virtual
  CPU(s):                     256
  On-line CPU(s) list:        0-255
  Thread(s) per core:         2
  Core(s) per socket:         64
  Socket(s):                  2
  NUMA node(s):               2
  Vendor ID:                  AuthenticAMD
  CPU family:                 25
  Model:                      17
  Model name:                 AMD EPYC 9554 64-Core Processor
  Stepping:                   1
  Frequency boost:            enabled
  CPU MHz:                    1500.000
  CPU max MHz:                3762.9880
  CPU min MHz:                1500.0000
  BogoMIPS:                   6190.41
  Virtualization:             AMD-V
  L1d cache:                  4 MiB
  L1i cache:                  4 MiB
  L2 cache:                   128 MiB
  L3 cache:                   512 MiB
  NUMA node0 CPU(s):          0-63,128-191
  NUMA node1 CPU(s):          64-127,192-255
  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:  Mitigation; safe RET
  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; 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
  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
```

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Platform Notes (Continued)

```
                          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 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 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 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

  From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE         LEVEL
      L1d       32K       4M   8 Data             1
      L1i       32K       4M   8 Instruction      1
      L2         1M     128M   8 Unified          2
      L3        32M     512M  16 Unified          3

  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 2 nodes (0-1)
    node 0 cpus: 0-63,128-191
    node 0 size: 515712 MB
    node 0 free: 513289 MB
    node 1 cpus: 64-127,192-255
    node 1 size: 516008 MB
    node 1 free: 513842 MB
    node distances:
    node   0   1
      0:  10  32
      1:  32  10

  ------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:     1056481988 kB

  ------------------------------------------------------------
  10. who -r
     run-level 3 Aug 31 11:59

  ------------------------------------------------------------
  11. Systemd service manager version: systemd 245 (245.4-4ubuntu3.20)
     Default Target  Status
     multi-user      degraded

  ------------------------------------------------------------
  12. Failed units, from systemctl list-units --state=failed
      UNIT                             LOAD   ACTIVE SUB    DESCRIPTION
    * fwupd-refresh.service            loaded failed failed Refresh fwupd metadata and update motd
    * NetworkManager-wait-online.service loaded failed failed Network Manager Wait Online
    * snapd.apparmor.service           loaded failed failed Load AppArmor profiles managed internally by
    snapd

  ------------------------------------------------------------
  13. Services, from systemctl list-unit-files
```

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Platform Notes (Continued)

```
  STATE           UNIT FILES
  enabled         ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                  accounts-daemon anacron apparmor autovt@ avahi-daemon bluetooth console-setup cron cups
                  cups-browsed dmesg e2scrub_reap getty@ gpu-manager grub-common grub-initrd-fallback
                  irqbalance kerneloops keyboard-setup network-manager networkd-dispatcher ondemand openvpn
                  pppd-dns rsync rsyslog secureboot-db setvtrgb snapd ssh sshd switcheroo-control syslog
                  systemd-pstore systemd-resolved systemd-timesyncd thermald ua-reboot-cmds udisks2 ufw
                  unattended-upgrades whoopsie wpa_supplicant
  enabled-runtime netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled        acpid brltty console-getty debug-shell ipmievd openvpn-client@ openvpn-server@ openvpn@
                  rtkit-daemon serial-getty@ speech-dispatcher speech-dispatcherd
                  systemd-boot-check-no-failures systemd-network-generator systemd-networkd
                  systemd-networkd-wait-online systemd-time-wait-sync upower wpa_supplicant-nl80211@
                  wpa_supplicant-wired@ wpa_supplicant@
  generated       apport ipmidrv openipmi
  indirect        display-manager lightdm saned@ spice-vdagent spice-vdagentd uuidd
  masked          alsa-utils cryptdisks cryptdisks-early hwclock pulseaudio-enable-autospawn rc rcS saned
                  sudo x11-common


  ------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-5.15.0-119-generic
  root=UUID=1ae71a13-cac0-48f6-b6e6-e15e5e687f57
  ro
  quiet
  splash
  vt.handoff=7


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


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


  ------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
```

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Platform Notes (Continued)

```
  defrag                      1
  max_ptes_none             511
  max_ptes_shared           256
  max_ptes_swap              64
  pages_to_scan            4096
  scan_sleep_millisecs    10000


 ----------------------------------------------------------------
 18. OS release
   From /etc/*-release /etc/*-version
   os-release Ubuntu 20.04.4 LTS


 ----------------------------------------------------------------
 19. Disk information
 SPEC is set to: /home/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/nvme0n1p2 ext4  938G   21G  870G   3% /


 ----------------------------------------------------------------
 20. /sys/devices/virtual/dmi/id
     Vendor:        Tyrone Systems
     Product:       Super Server
     Product Family: SMC H13
     Serial:        0123456789


 ----------------------------------------------------------------
 21. dmidecode
   Additional information from dmidecode 3.2 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:
     8x NO DIMM NO DIMM
     16x Samsung M321R8GA0BB0-CQKZJ 64 GB 2 rank 4800



 ----------------------------------------------------------------
 22. BIOS
 (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       American Megatrends International, LLC.
     BIOS Version:      1.9a
     BIOS Date:         06/21/2024
     BIOS Revision:     5.27
```

Compiler Version Notes

```
==================================================================================================
C      | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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)
--------------------------------------------------------------------------------------------------
```

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Compiler Version Notes (Continued)

```
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        | 502.gcc_r(peak)
------------------------------------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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 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++      | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------------------------------------


==============================================================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) 531.deepsjeng_r(base, peak) 541.leela_r(base,
         | peak)
------------------------------------------------------------------------------------------------------------
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++      | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------------------------------------


==============================================================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) 531.deepsjeng_r(base, peak) 541.leela_r(base,
         | peak)
------------------------------------------------------------------------------------------------------------
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
```

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Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)
(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1140

SPECrate®2017_int_peak = 1210

CPU2017 License: 6802
Test Sponsor: Netweb Technologies India Ltd
Tested by: Tyrone Systems

Test Date: Aug-2024
Hardware Availability: Jun-2023
Software Availability: Aug-2024

Compiler Version Notes (Continued)

```
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------------------


===============================================================================================
Fortran | 548.exchange2_r(base, peak)
-----------------------------------------------------------------------------------------------
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
```

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
```

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Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)
(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1140

SPECrate®2017_int_peak = 1210

CPU2017 License: 6802		**Test Date:**	Aug-2024
Test Sponsor:	Netweb Technologies India Ltd	**Hardware Availability:**	Jun-2023
Tested by:	Tyrone Systems	**Software Availability:**	Aug-2024

Base Optimization Flags (Continued)

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

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
```

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Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)
(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1140

SPECrate®2017_int_peak = 1210

CPU2017 License: 6802
Test Sponsor: Netweb Technologies India Ltd
Tested by: Tyrone Systems

Test Date: Aug-2024
Hardware Availability: Jun-2023
Software Availability: Aug-2024

Peak Compiler Invocation (Continued)

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: `-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-fprofile-instr-generate`(pass 1)
`-fprofile-instr-use`(pass 2) `-Ofast -march=znver4`
`-fveclib=AMDLIBM -ffast-math -fstruct-layout=7`
`-mllvm -unroll-threshold=50 -fremap-arrays`
`-mllvm -inline-threshold=1000`
`-mllvm -reduce-array-computations=3`
`-faggressive-loop-transform -fvector-transform`
`-fscalar-transform -lamdlibm -lflang -lamdalloc`

502.gcc_r: `-m32 -flto -z muldefs -Ofast -march=znver4`
`-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`

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Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)

(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1140

SPECrate®2017_int_peak = 1210

CPU2017 License: 6802

Test Sponsor: Netweb Technologies India Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jun-2023

Software Availability: Aug-2024

Peak Optimization Flags (Continued)

```
505.mcf_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc
```

```
525.x264_r: basepeak = yes
```

```
557.xz_r: Same as 505.mcf_r
```

C++ benchmarks:

```
520.omnetpp_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden
-lamdlibm -lamdalloc-ext
```

```
523.xalancbmk_r: -m32 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=aggressive
-fno-loop-reroll -Ofast -march=znver4 -fveclib=AMDLIBM
-ffast-math -finline-aggressive
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-lamdalloc-ext
```

```
531.deepsjeng_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -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 -lamdalloc-ext
```

```
541.leela_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
```

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Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)
(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1140

SPECrate®2017_int_peak = 1210

CPU2017 License: 6802		**Test Date:**	Aug-2024
Test Sponsor:	Netweb Technologies India Ltd	**Hardware Availability:**	Jun-2023
Tested by:	Tyrone Systems	**Software Availability:**	Aug-2024

Peak Optimization Flags (Continued)

541.leela_r (continued):
```
-finline-aggressive -mllvm -unroll-threshold=100
-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 -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
```

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/aocc4/znver4/rate/amd_rate_aocc400_znver4_A_lib/lib32`

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

523.xalancbmk_r: `-L/usr/lib32 -Wno-unused-command-line-argument`
`-L/home/work/cpu2017/v119/aocc4/znver4/rate/amd_rate_aocc400_znver4_A_lib/lib32`

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/Tyrone-Platform-Settings-V1.2-Genoa-revD.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/Tyrone-Platform-Settings-V1.2-Genoa-revD.xml
```

SPEC CPU®2017 Integer Rate Result

Tyrone Systems
(Test Sponsor: Netweb Technologies India Ltd)

(Tyrone Camarero SDA200A2N-212)
(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1140

SPECrate®2017_int_peak = 1210

CPU2017 License: 6802

Test Sponsor: Netweb Technologies India Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jun-2023

Software Availability: Aug-2024

Tested with SPEC CPU®2017 v1.1.9 on 2024-08-31 02:41:12-0400.
Report generated on 2024-09-25 09:16:25 by CPU2017 PDF formatter v6716.
Originally published on 2024-09-24.