SPEC CPU®2017 Integer Rate Result

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Supermicro

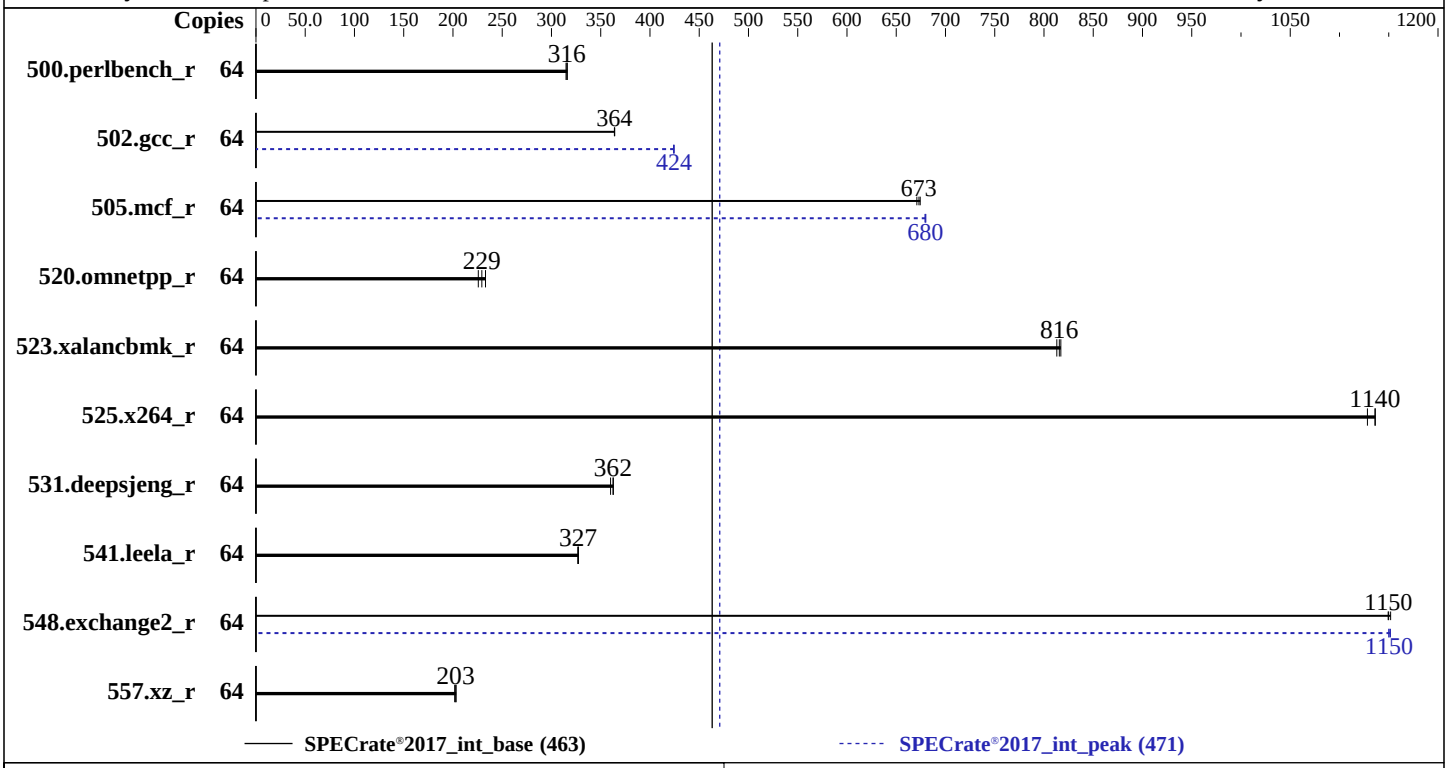
CloudDC A+ Server AS -1115CS-TNR
(H13SSW , AMD EPYC 9355P)

SPECrate®2017_int_base = 463

SPECrate®2017_int_peak = 471

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Sep-2024
Hardware Availability: Oct-2024
Software Availability: Oct-2024



Hardware

CPU Name:	AMD EPYC 9355P
Max MHz:	4400
Nominal:	3550
Enabled:	32 cores, 1 chip, 2 threads/core
Orderable:	1 chip
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 / 4 cores
Other:	None
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-6400B-R, running at 6000)
Storage:	1 x 3.5 TB NVMe SSD
Other:	CPU Cooling: Air

Software

OS:	Ubuntu 24.04.1 LTS Kernel 6.8.0-45-generic
Compiler:	C/C++/Fortran: Version 5.0.0 of AOCC
Parallel:	No
Firmware:	Version 3.0 released Sep-2024
File System:	ext4
System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other:	None
Power Management:	BIOS and OS set to prefer performance at the cost of additional power usage.

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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	64	324	315	**323**	**316**	322	316	64	324	315	**323**	**316**	322	316
502.gcc_r	64	**249**	**364**	249	364	249	364	64	213	425	214	424	**214**	**424**
505.mcf_r	64	154	671	**154**	**673**	153	674	64	152	679	**152**	**680**	152	680
520.omnetpp_r	64	**366**	**229**	372	226	360	233	64	**366**	**229**	372	226	360	233
523.xalancbmk_r	64	82.7	817	**82.9**	**816**	83.1	813	64	82.7	817	**82.9**	**816**	83.1	813
525.x264_r	64	99.3	1130	**98.7**	**1140**	98.6	1140	64	99.3	1130	**98.7**	**1140**	98.6	1140
531.deepsjeng_r	64	204	360	**202**	**362**	202	363	64	204	360	**202**	**362**	202	363
541.leela_r	64	**324**	**327**	324	327	324	327	64	**324**	**327**	324	327	324	327
548.exchange2_r	64	**146**	**1150**	146	1150	146	1150	64	146	1150	146	1150	**146**	**1150**
557.xz_r	64	340	203	343	202	**341**	**203**	64	340	203	343	202	**341**	**203**

SPECrate®2017_int_base = 463

SPECrate®2017_int_peak = 471

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

```
The AMD64 AOCC Compiler Suite is available at
http://developer.amd.com/amd-aocc/
```

Submit Notes

```
The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations:
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/spec/cpu2017aocc500znver5A1/amd_rate_aocc500_znver5_A_lib/lib:/spec/cpu2017aocc500znver5A1/amd_rate_
     aocc500_znver5_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Platform Notes

```
BIOS Settings:
NUMA Nodes Per Socket = NPS4
Determinism Control = Manual
Determinism Enable = Power
TDP Control = Manual
TDP = 300
Package Power Limit Control = Manual
Package Power Limit = 300

 Sysinfo program /spec/cpu2017aocc500znver5A1/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on smc0777-os Thu Sep 19 00:23:28 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 255 (255.4-1ubuntu8.4)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
```

(Continued on next page)

Platform Notes (Continued)

```
21. dmidecode
22. BIOS
------------------------------------------------------------

------------------------------------------------------------
1. uname -a
  Linux smc0777-os 6.8.0-45-generic #45-Ubuntu SMP PREEMPT_DYNAMIC Fri Aug 30 12:02:04 UTC 2024 x86_64 x86_64
  x86_64 GNU/Linux

------------------------------------------------------------
2. w
   00:23:28 up 48 min,  3 users,  load average: 0.75, 0.97, 0.45
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  amd      tty1     -                23:53   29:34   0.03s   ?    -bash
  amd              172.31.22.108    23:56   19:46   0.00s  0.01s sshd: amd [priv]
  amd              172.31.22.108    23:56   19:46   0.00s  0.01s sshd: amd [priv]

------------------------------------------------------------
3. Username
  From environment variable $USER:  root
  From the command 'logname':       amd

------------------------------------------------------------
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              3094154
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 SCREEN -S cpu
 /bin/bash
 python3 ./run_amd_rate_aocc500_znver5_A1.py
 /bin/bash ./amd_rate_aocc500_znver5_A1.sh
 runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 intrate
 runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
   --runmode rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /spec/cpu2017aocc500znver5A1

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9355P 32-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 2
    stepping        : 1
    microcode       : 0xb002116
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
```

(Continued on next page)

Platform Notes (Continued)

```
     TLB size        : 192 4K pages
     cpu cores       : 32
     siblings        : 64
     1 physical ids (chips)
     64 processors (hardware threads)
     physical id 0: core ids 0-3,8-11,16-19,24-27,32-35,40-43,48-51,56-59
     physical id 0: apicids 0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119
   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):                               64
   On-line CPU(s) list:                  0-63
   Vendor ID:                            AuthenticAMD
   BIOS Vendor ID:                       Advanced Micro Devices, Inc.
   Model name:                           AMD EPYC 9355P 32-Core Processor
   BIOS Model name:                      AMD EPYC 9355P 32-Core Processor                Unknown CPU @ 3.5GHz
   BIOS CPU family:                      107
   CPU family:                           26
   Model:                                2
   Thread(s) per core:                   2
   Core(s) per socket:                   32
   Socket(s):                            1
   Stepping:                             1
   Frequency boost:                      enabled
   CPU(s) scaling MHz:                   80%
   CPU max MHz:                          4413.2319
   CPU min MHz:                          1500.0000
   BogoMIPS:                             7100.18
   Flags:                                fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
                                         pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb
                                         rdtscp lm constant_tsc rep_good amd_lbr_v2 nopl nonstop_tsc cpuid
                                         extd_apicid aperfmperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid
                                         sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
                                         cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
                                         osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
                                         perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2
                                         ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2
                                         smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                                         avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                                         xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                                         cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
                                         xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                                         nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                                         pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi
                                         avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                                         avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid bus_lock_detect
                                         movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                                         flush_l1d debug_swap
   Virtualization:                       AMD-V
   L1d cache:                            1.5 MiB (32 instances)
   L1i cache:                            1 MiB (32 instances)
   L2 cache:                             32 MiB (32 instances)
```

(Continued on next page)

Platform Notes (Continued)

```
  L3 cache:                              256 MiB (8 instances)
  NUMA node(s):                          4
  NUMA node0 CPU(s):                     0-7,32-39
  NUMA node1 CPU(s):                     8-15,40-47
  NUMA node2 CPU(s):                     16-23,48-55
  NUMA node3 CPU(s):                     24-31,56-63
  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     1.5M   12 Data            1    64        1             64
     L1i       32K       1M    8 Instruction     1    64        1             64
     L2         1M      32M   16 Unified         2  1024        1             64
     L3        32M     256M   16 Unified         3 32768        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 4 nodes (0-3)
  node 0 cpus: 0-7,32-39
  node 0 size: 193116 MB
  node 0 free: 191928 MB
  node 1 cpus: 8-15,40-47
  node 1 size: 193530 MB
  node 1 free: 192494 MB
  node 2 cpus: 16-23,48-55
  node 2 size: 193487 MB
  node 2 free: 192481 MB
  node 3 cpus: 24-31,56-63
  node 3 size: 193475 MB
  node 3 free: 192462 MB
  node distances:
  node   0   1   2   3
    0:  10  12  12  12
    1:  12  10  12  12
    2:  12  12  10  12
    3:  12  12  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       792175992 kB

------------------------------------------------------------
10. who -r
  run-level 5 Sep 18 23:34
```

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Platform Notes (Continued)

```
------------------------------------------------------------
11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.4)
  Default Target  Status
  graphical       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 lvm2-monitor multipathd
                   networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb
                   snapd ssh sysstat systemd-networkd systemd-networkd-wait-online systemd-pstore
                   systemd-resolved systemd-timesyncd thermald ua-reboot-cmds ubuntu-advantage udisks2 ufw
                   unattended-upgrades vgauth
  enabled-runtime  netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled         console-getty debug-shell iscsid nftables rsync serial-getty@
                   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
  masked           cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.8.0-45-generic
  root=UUID=5ce879cb-dbc0-4ed8-85e3-3e72f20d0b88
  ro

------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 47:
    current policy: frequency should be within 1.50 GHz and 3.55 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:  19800MHz

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

(Continued on next page)

Platform Notes (Continued)

```
  vm.nr_overcommit_hugepages          0
  vm.swappiness                       1
  vm.watermark_boost_factor       15000
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode                1

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

------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
  defrag                      1
  max_ptes_none             511
  max_ptes_shared           256
  max_ptes_swap              64
  pages_to_scan            4096
  scan_sleep_millisecs    10000

------------------------------------------------------------
18. OS release
  From /etc/*-release /etc/*-version
  os-release Ubuntu 24.04.1 LTS

------------------------------------------------------------
19. Disk information
SPEC is set to: /spec/cpu2017aocc500znver5A1
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p2 ext4  3.5T   18G  3.3T   1% /

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

------------------------------------------------------------
21. 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:
    4x Samsung M321R8GA0PB1-CCPKC 64 GB 2 rank 6400, configured at 6000
    8x Samsung M321R8GA0PB1-CCPXC 64 GB 2 rank 6400, configured at 6000


------------------------------------------------------------
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       American Megatrends International, LLC.
   BIOS Version:      3.0
   BIOS Date:         09/06/2024
   BIOS Revision:     5.35
```

Compiler Version Notes

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

==============================================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------

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

==============================================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
        | 541.leela_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
Fortran | 548.exchange2_r(base, peak)
--------------------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Base Portability Flags

500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64
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

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Base Optimization Flags (Continued)

C++ benchmarks (continued):
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang -lamdalloc-ext
-ldl

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

Base Other Flags

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

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

Fortran benchmarks:
-Wno-unused-command-line-argument

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak Portability Flags

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

Peak Optimization Flags

C benchmarks:

500.perlbench_r: `basepeak = yes`

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`

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Peak Optimization Flags (Continued)

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

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/Supermicro-Platform-Settings-V1.2-Turin-revB.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/Supermicro-Platform-Settings-V1.2-Turin-revB.xml

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