SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
(3.10 GHz, AMD EPYC 9554)

$SPECrate^®2017\_int\_base = 1340$

$SPECrate^®2017\_int\_peak = 1410$

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Benchmark	Copies	Base	Peak
500.perlbench_r	256	1000	
502.gcc_r	256	1020	1320
505.mcf_r	256	1940	
520.omnetpp_r	256	624	
523.xalancbmk_r	256	1420	1950
525.x264_r	256	3440	
531.deepsjeng_r	256	1180	
541.leela_r	256	1130	1130
548.exchange2_r	256	3310	
557.xz_r	256	676	676

SPECrate®2017_int_base (1340)   SPECrate®2017_int_peak (1410)

Hardware

CPU Name: AMD EPYC 9554
 Max MHz: 3750
 Nominal: 3100
Enabled: 128 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: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 4.0 TB PCIE NVME SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86_64)
  Kernel 5.14.21-150400.22-default
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 0602 released Dec-2022
File System: xfs
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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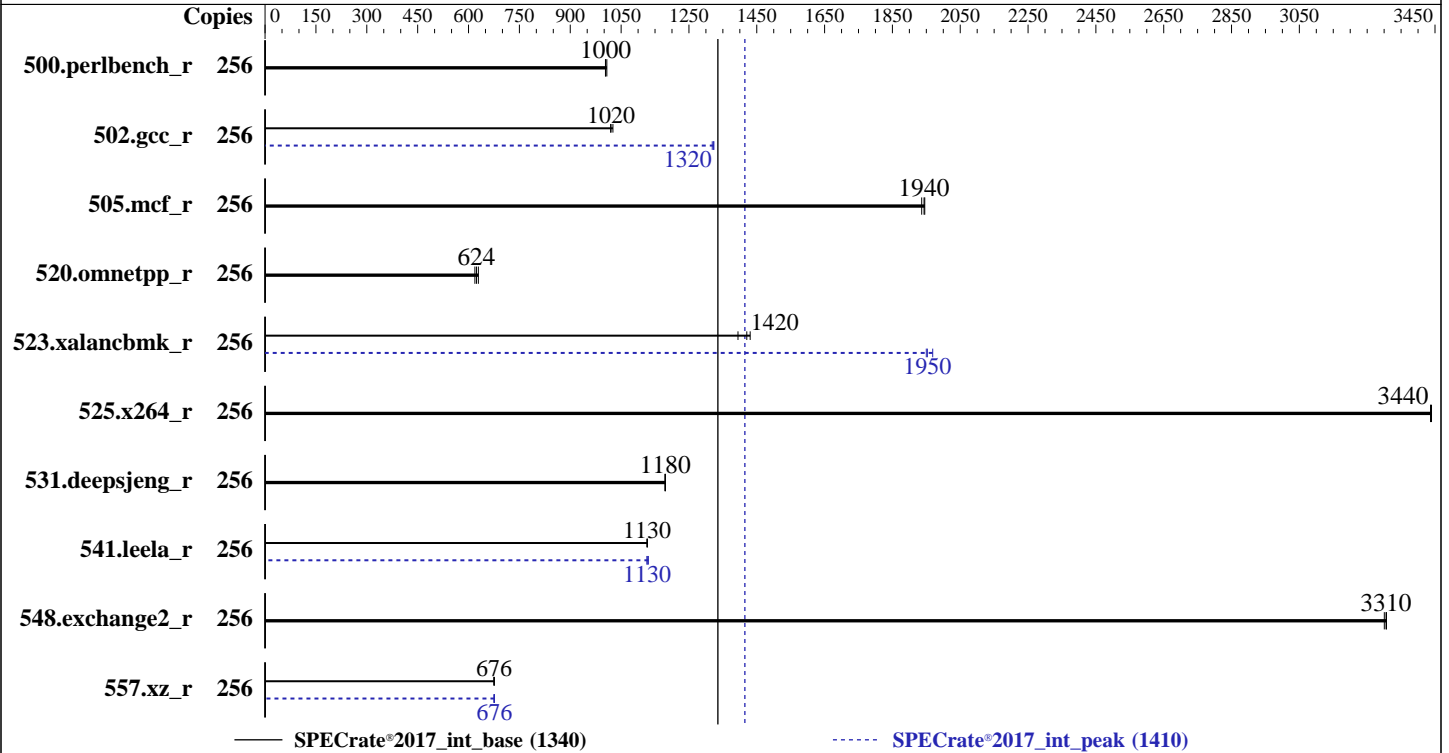**Test Sponsor:** ASUSTeK Computer Inc.
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	256	**406**	**1000**	406	1000	404	1010	256	**406**	**1000**	406	1000	404	1010
502.gcc_r	256	356	1020	353	1030	**355**	**1020**	256	275	1320	274	1320	**274**	**1320**
505.mcf_r	256	213	1950	**213**	**1940**	214	1940	256	213	1950	**213**	**1940**	214	1940
520.omnetpp_r	256	534	629	543	619	**539**	**624**	256	534	629	543	619	**539**	**624**
523.xalancbmk_r	256	194	1390	**190**	**1420**	189	1430	256	**138**	**1950**	137	1970	139	1950
525.x264_r	256	130	3440	**130**	**3440**	130	3440	256	130	3440	**130**	**3440**	130	3440
531.deepsjeng_r	256	249	1180	**249**	**1180**	249	1180	256	249	1180	**249**	**1180**	249	1180
541.leela_r	256	376	1130	**376**	**1130**	376	1130	256	376	1130	**376**	**1130**	375	1130
548.exchange2_r	256	203	3300	203	3310	**203**	**3310**	256	203	3300	203	3310	**203**	**3310**
557.xz_r	256	**409**	**676**	409	676	410	674	256	**409**	**676**	409	676	410	675
SPECrate®2017_int_base =		1340												
SPECrate®2017_int_peak =		1410												

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
 OS set to performance mode via cpupower frequency-set -g performance
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.
```

(Continued on next page)

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

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Operating System Notes (Continued)

```
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.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
      "/cpu119/amd_rate_aocc400_genoa_B_lib/lib:/cpu119/amd_rate_aocc400_genoa
      _B_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 Configuration:
SR-IOV Support = Disabled
SVM Mode = Disabled
NUMA nodes per socket = NPS4
Determinism Control = Manual
Determinism Enable = Power
Engine Boost = Aggressive
TDP Control = Manual
TDP = 400
PPT Control = Manual
PPT = 400
BMC Configuration:
```

(Continued on next page)

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Platform Notes (Continued)

```
Fan mode = Full speed mode

 Sysinfo program /cpu119/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Sat Mar 18 14:31:29 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+suse.124.g2bc0b2c447)
 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 localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
   x86_64 x86_64 x86_64 GNU/Linux


 -------------------------------------------------------------
 2. w
    14:31:29 up 1 day, 20:59,  2 users,  load average: 3.41, 58.10, 116.09
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                Thu17   44:57m 1.41s  0.20s /bin/bash ./amd_rate_aocc400_genoa_B1.sh
    root     tty2     -                Fri08   29:49m 0.05s  0.05s -bash
```

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Platform Notes (Continued)

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


        -----------------------------------------------------------
        4. ulimit -a
          core file size          (blocks, -c) unlimited
          data seg size           (kbytes, -d) unlimited
          scheduling priority             (-e) 0
          file size               (blocks, -f) unlimited
          pending signals                 (-i) 6190560
          max locked memory       (kbytes, -l) 2097152
          max memory size         (kbytes, -m) unlimited
          open files                      (-n) 1024
          pipe size            (512 bytes, -p) 8
          POSIX message queues     (bytes, -q) 819200
          real-time priority              (-r) 0
          stack size              (kbytes, -s) unlimited
          cpu time               (seconds, -t) unlimited
          max user processes              (-u) 6190560
          virtual memory          (kbytes, -v) unlimited
          file locks                      (-x) unlimited


        -----------------------------------------------------------
        5. sysinfo process ancestry
         /usr/lib/systemd/systemd --switched-root --system --deserialize 34
         login -- root
         -bash
         /bin/bash ./rate.sh
         python3 ./run_amd_rate_aocc400_genoa_B1.py
         /bin/bash ./amd_rate_aocc400_genoa_B1.sh
         runcpu --config amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 intrate
        runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 --nopower --runmode
           rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
            $SPEC/tmp/CPU2017.341/templogs/preenv.intrate.341.0.log --lognum 341.0 --from_runcpu 2
         specperl $SPEC/bin/sysinfo
        $SPEC = /cpu119


        -----------------------------------------------------------
        6. /proc/cpuinfo
            model name      : AMD EPYC 9554 64-Core Processor
            vendor_id       : AuthenticAMD
            cpu family      : 25
            model           : 17
            stepping        : 1
            microcode       : 0xa101111
```

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Platform Notes (Continued)

```
    bugs               : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size           : 3584 4K pages
    cpu cores          : 64
    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 2.37.2:
  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 9554 64-Core Processor
  CPU family:                 25
  Model:                      17
  Thread(s) per core:         2
  Core(s) per socket:         64
  Socket(s):                  2
  Stepping:                   1
  Frequency boost:            enabled
  CPU max MHz:                3762.9880
  CPU min MHz:                1500.0000
  BogoMIPS:                   6199.65
 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 arat npt lbrv
```

(Continued on next page)

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Platform Notes (Continued)

```
                        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:                       512 MiB (16 instances)
    NUMA node(s):                   8
    NUMA node0 CPU(s):              0-15,128-143
    NUMA node1 CPU(s):              16-31,144-159
    NUMA node2 CPU(s):              32-47,160-175
    NUMA node3 CPU(s):              48-63,176-191
    NUMA node4 CPU(s):              64-79,192-207
    NUMA node5 CPU(s):              80-95,208-223
    NUMA node6 CPU(s):              96-111,224-239
    NUMA node7 CPU(s):              112-127,240-255
    Vulnerability Itlb multihit:    Not affected
    Vulnerability L1tf:             Not affected
    Vulnerability Mds:              Not affected
    Vulnerability Meltdown:         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        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: 0-15,128-143
    node 0 size: 193257 MB
    node 0 free: 190703 MB
    node 1 cpus: 16-31,144-159
    node 1 size: 193519 MB
    node 1 free: 192402 MB
    node 2 cpus: 32-47,160-175
```

(Continued on next page)

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Platform Notes (Continued)

```
   node 2 size: 193519 MB
   node 2 free: 192438 MB
   node 3 cpus: 48-63,176-191
   node 3 size: 193519 MB
   node 3 free: 192394 MB
   node 4 cpus: 64-79,192-207
   node 4 size: 193485 MB
   node 4 free: 192398 MB
   node 5 cpus: 80-95,208-223
   node 5 size: 193519 MB
   node 5 free: 192460 MB
   node 6 cpus: 96-111,224-239
   node 6 size: 193519 MB
   node 6 free: 192460 MB
   node 7 cpus: 112-127,240-255
   node 7 size: 193321 MB
   node 7 free: 191790 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:       1584808096 kB


 --------------------------------------------------------------
 10. who -r
    run-level 3 Mar 16 17:33


 --------------------------------------------------------------
 11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target  Status
    multi-user      running


 --------------------------------------------------------------
 12. Services, from systemctl list-unit-files
    STATE           UNIT FILES
    enabled         YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged
                    irqbalance issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections
                    postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4
```

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Platform Notes (Continued)

```
                      wickedd-dhcp6 wickedd-nanny
  enabled-runtime   systemd-remount-fs
  disabled          autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                      chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                    firewalld gpm grub2-once haveged-switch-root ipmi ipmievd issue-add-ssh-keys kexec-load
                     lunmask man-db-create multipathd nfs nfs-blkmap nvmf-autoconnect rdisc rpcbind
                    rpmconfigcheck rsyncd serial-getty@ smartd_generate_opts snmpd snmptrapd svnserve
                       systemd-boot-check-no-failures systemd-network-generator systemd-sysext
                        systemd-time-wait-sync systemd-timesyncd tuned udisks2
  indirect          wickedd


  --------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
  root=UUID=bd4eeb48-8f2c-47c9-ae06-b7241b1d0eb7
  splash=silent
  mitigations=auto
  quiet
  security=apparmor


  --------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 1.50 GHz and 3.10 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes


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


  --------------------------------------------------------------
16. sysctl
  kernel.numa_balancing             1
  kernel.randomize_va_space         0
  vm.compaction_proactiveness      20
  vm.dirty_background_bytes         0
  vm.dirty_background_ratio        10
  vm.dirty_bytes                    0
  vm.dirty_expire_centisecs      3000
  vm.dirty_ratio                    8
  vm.dirty_writeback_centisecs    500
  vm.dirtytime_expire_seconds   43200
```

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Platform Notes (Continued)

```
  vm.extfrag_threshold               500
  vm.min_unmapped_ratio                1
  vm.nr_hugepages                      0
  vm.nr_hugepages_mempolicy            0
  vm.nr_overcommit_hugepages           0
  vm.swappiness                        1
  vm.watermark_boost_factor        15000
  vm.watermark_scale_factor           10
  vm.zone_reclaim_mode                 1


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


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


  ----------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP4


  ----------------------------------------------------------------
20. Disk information
SPEC is set to: /cpu119
  Filesystem      Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p4 xfs   2.0T   53G  2.0T   3% /


  ----------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         ASUSTeK COMPUTER INC.
    Product:        RS720A-E12-RS12
    Product Family: Server
    Serial:         123456789012


  ----------------------------------------------------------------
22. dmidecode
```

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ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
(3.10 GHz, AMD EPYC 9554)

SPECrate®2017_int_base = 1340

SPECrate®2017_int_peak = 1410

CPU2017 License: 9016	**Test Date:** Mar-2023
Test Sponsor: ASUSTeK Computer Inc.	**Hardware Availability:** Dec-2022
Tested by: ASUSTeK Computer Inc.	**Software Availability:** Nov-2022

Platform Notes (Continued)

```
   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:
     24x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800


  ------------------------------------------------------------
  23. BIOS
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:        American Megatrends Inc.
    BIOS Version:       0602
    BIOS Date:          12/09/2022
    BIOS Revision:      6.2
```

Compiler Version Notes

```
==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: i386-unknown-linux-gnu
Thread model: posix
```

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Test Sponsor: ASUSTeK Computer Inc.　　　　　　　　　**Hardware Availability:** Dec-2022
Tested by: ASUSTeK Computer Inc.　　　　　　　　　　　**Software Availability:** Nov-2022

Compiler Version Notes (Continued)

```
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C++       | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C++       | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C++       | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
```

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ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
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Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Compiler Version Notes (Continued)

```
        | 531.deepsjeng_r(base, peak) 541.leela_r(base, peak)
------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------


========================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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`

ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
(3.10 GHz, AMD EPYC 9554)

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SPECrate®2017_int_peak = 1410

CPU2017 License:	9016	**Test Date:**	Mar-2023
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Dec-2022
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Nov-2022

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
```

Base Other Flags

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

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

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

ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
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CPU2017 License: 9016　　　　　　　　　　　　　　　　　**Test Date:**　　　　　　Mar-2023
Test Sponsor:　　ASUSTeK Computer Inc.　　　　　　**Hardware Availability:** Dec-2022
Tested by:　　　　ASUSTeK Computer Inc.　　　　　　**Software Availability:**　Nov-2022

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 -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`

505.mcf_r: `basepeak = yes`

525.x264_r: `basepeak = yes`

557.xz_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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ASUSTeK Computer Inc.

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CPU2017 License: 9016
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Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2023
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Peak Optimization Flags (Continued)

557.xz_r (continued):
```
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc
```

C++ benchmarks:

520.omnetpp_r: basepeak = yes

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: basepeak = yes

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
-finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden
-lamdlibm -lflang -lamdalloc-ext
```

Fortran benchmarks:

548.exchange2_r: basepeak = yes

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/v118/aocc4/b1/rate/amd_rate_aocc400_genoa_B_lib/lib32
```

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ASUSTeK Computer Inc.

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CPU2017 License: 9016		**Test Date:**	Mar-2023
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Dec-2022
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Nov-2022

Peak Other Flags (Continued)

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/v118/aocc4/b1/rate/amd_rate_aocc400_genoa_B_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/ASUSTekPlatform-Settings-AMD-K14-V1.1.html`
`http://www.spec.org/cpu2017/flags/aocc400-flags.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-K14-V1.1.xml`
`http://www.spec.org/cpu2017/flags/aocc400-flags.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 2023-03-18 02:31:29-0400.
Report generated on 2023-04-14 11:27:10 by CPU2017 PDF formatter v6442.
Originally published on 2023-04-14.