## SPEC CPU®2017 Integer Rate Result

### ASUSTeK Computer Inc.

**ASUS RS720A-E12-RS12 (2.20 GHz, AMD EPYC 9734)**

<table>
<thead>
<tr>
<th><strong>CPU2017 License:</strong> 9016</th>
<th><strong>Test Date:</strong> Nov-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Sponsor:</strong> ASUSTeK Computer Inc.</td>
<td><strong>Hardware Availability:</strong> Jun-2023</td>
</tr>
<tr>
<td><strong>Tested by:</strong> ASUSTeK Computer Inc.</td>
<td><strong>Software Availability:</strong> Nov-2022</td>
</tr>
</tbody>
</table>

### SPECrate®2017_int_base = 1740

### SPECrate®2017_int_peak = 1890

**ASUSTeK Computer Inc.**

**ASUS RS720A-E12-RS12 (2.20 GHz, AMD EPYC 9734)**

<table>
<thead>
<tr>
<th><strong>CPU Name:</strong> AMD EPYC 9734</th>
<th><strong>OS:</strong> SUSE Linux Enterprise Server 15 SP4 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Max MHz:</strong> 3000</td>
<td><strong>Kernel 5.14.21-150400.22-default</strong></td>
</tr>
<tr>
<td><strong>Nominal:</strong> 2200</td>
<td><strong>Compiler:</strong> C/C++/Fortran: Version 4.0.0 of AOCC</td>
</tr>
<tr>
<td><strong>Enabled:</strong> 224 cores, 2 chips, 2 threads/core</td>
<td><strong>Parallel:</strong> No</td>
</tr>
<tr>
<td><strong>Orderable:</strong> 1.2 chips</td>
<td><strong>Firmware:</strong> Version 1002 released May-2023</td>
</tr>
<tr>
<td><strong>Cache L1:</strong> 32 KB I + 32 KB D on chip per core</td>
<td><strong>File System:</strong> xfs</td>
</tr>
<tr>
<td><strong>L2:</strong> 1 MB I+D on chip per core</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>L3:</strong> 256 MB I+D on chip per chip, 16 MB shared / 7 cores</td>
<td><strong>Base Pointers:</strong> 64-bit</td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
<td><strong>Peak Pointers:</strong> 32/64-bit</td>
</tr>
<tr>
<td><strong>Memory:</strong> 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)</td>
<td><strong>Other:</strong> None</td>
</tr>
<tr>
<td><strong>Storage:</strong> 1 x 4.0 TB PCIe NVMe SSD</td>
<td><strong>Power Management:</strong> BIOS and OS set to prefer performance at the cost of additional power usage.</td>
</tr>
</tbody>
</table>

### Software

### Hardware

<table>
<thead>
<tr>
<th><strong>Copies</strong></th>
<th><strong>SPECrate®2017_int_base (1740)</strong></th>
<th><strong>SPECrate®2017_int_peak (1890)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>1420</td>
<td>4720</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>1140</td>
<td>2390</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>1520</td>
<td>2410</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>819</td>
<td>2480</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>1540</td>
<td>2580</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>448</td>
<td>4720</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>1670</td>
<td>4610</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>1580</td>
<td>4650</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>900</td>
<td>4680</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>901</td>
<td>4680</td>
</tr>
</tbody>
</table>

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ASUS RS720A-E12-RS12
(2.20 GHz, AMD EPYC 9734)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
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<tbody>
<tr>
<td>500.perlbench_r</td>
<td>448</td>
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<td>1420</td>
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<td>1420</td>
<td>448</td>
<td>502</td>
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<td>502.gcc_r</td>
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<td>4720</td>
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<td>4720</td>
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<td>166</td>
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</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>448</td>
<td>308</td>
<td>1670</td>
<td>448</td>
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<td>1670</td>
<td>448</td>
<td>308</td>
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<tr>
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<tr>
<td>557.xz_r</td>
<td>448</td>
<td>537</td>
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<td>899</td>
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<td>537</td>
<td>901</td>
<td></td>
</tr>
</tbody>
</table>

SPECrate®2017_int_base = 1740
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

The AMD64 AOC 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

'urlimit -s unlimited' was used to set environment stack size limit
'urlimit -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 numacli 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 madvice > /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 = "/aocczn4/amd_rate_aocc400_znver4_A_lib/lib:/aocczn4/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 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:
Fan mode = Full speed mode
Sysinfo program /aocczn4/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197 running on localhost Tue Nov 14 17:27:19 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. numacl --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

(Continued on next page)
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Platform Notes (Continued)

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

PLATFORM NOTES (CONTINUED)

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
   17:27:19 up 8:30, 2 users, load average: 0.78, 4.20, 3.32
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                09:00   14.00s  1.54s  0.12s /bin/bash ./amd_rate_aocc400_znver4_A1.sh
   root     tty2     -                13:20   37.00s  0.06s  0.06s -bash

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) 6190564
   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) 6190564
   virtual memory          (kbytes, -v) unlimited
   file locks              (-x) unlimited

5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 30
   login -- root
   -bash
   /bin/bash ./rate.sh
   python3 ./run_amd_rate_aocc400_znver4_A1.py
   /bin/bash ./amd_rate_aocc400_znver4_A1.sh
   runcpu --configfile 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 --no-power
   $SPEC/tmp/CPU2017.290/templogs/preenv.intrate.290.0.log --lognum 290.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo

(Continued on next page)
## Platform Notes (Continued)

$SPEC = /aocczn4

6. `/proc/cpuinfo`

```plaintext
model name: AMD EPYC 9734 112-Core Processor
vendor_id: AuthenticAMD
cpu family: 25
model: 160
stepping: 2
microcode: 0xaa0020e
bugs: sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size: 3584 4K pages
cpu cores: 112
siblings: 224
2 physical ids (chips)
448 processors (hardware threads)
physical id 0: core ids
physical id 1: core ids
physical id 0: apicids
physical id 1: apicids
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`:

```plaintext
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): 448
On-line CPU(s) list: 0–447
Vendor ID: AuthenticAMD
Model name: AMD EPYC 9734 112-Core Processor
CPU family: 25
Model: 160
Thread(s) per core: 2
Core(s) per socket: 112
Socket(s): 2
Stepping: 2
Frequency boost: enabled
CPU max MHz: 2999.2180
CPU min MHz: 1500.0000
BogoMIPS: 4399.99
Flags: fpu, vme, de, pse, ts, msr, xcr0, x8apic, sep, mtrr, pge, mca, cmov, pat, pse36, clflush, mmx, fxsr, sse2, ht, syscall, nx, mmxext, fxsr, opt, pdpe1gb, rdtscp, lm, constant_tsc, rep_good, nopl, nonstop_tsc, cpuid, extd_apicid, aperfmperf, rafi, pni, pclmulqdq,monitor, ss, sse3, fma, x2apic, movbe, popcnt, aes, xsave, avx, f16c, rdrand, lahf_lm, cmp_legacy, svm, extapic, cr8_legacy, abm, sse4a, misaligncache, 3dnowprefetch, osbw, ibs, skinit, wdt, tsc, toppxet, perfctr_core, perfctr_nb, bperf, perfctr_l1d, mwaitx, cpb, cat_l1d, cdq, fpub, invpcid_single, hw_pte4size, ssbd, mba, ibrs, ibpb, stibp, vmmcall, fsgsbase, bml1, avx2, aem64, bmi2, erms, invpcid, qhm, rdt_a, avx512f, avx512dq, rdseed, adx, smap
(Continued on next page)
Page 6

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<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>= 1890</td>
</tr>
</tbody>
</table>

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

---

### Platform Notes (Continued)

```plaintext
avx512fma cliflushopt clwb avx512cd sha_ni avx512bw avx512vl xsavexer
xsavexk xgetbv1 xsaves cqm_11c cqm_occup_11c cqm_mbm_total cqm_mbm_local
avx512_bf16 clzero irperf xsavexeprtr rdpru wbnoinvd amd_ppin arat npt lbrv
svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassist
paeuselast pfthreshold avic_v_mslave_vmload vgif v_spec_ctl avx512v bmi
umip pku ospke avx512_vbmi2 gfn1 vae_v pcmulqdq avx512_vnni avx512_bitalg
avx512_vpopcntdq la57 rdpid overflow_recover succor smca fsmc flush_l1d
```

<table>
<thead>
<tr>
<th>Virtualization:</th>
<th>AMD-V</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d cache:</td>
<td>7 MiB (224 instances)</td>
</tr>
<tr>
<td>L1i cache:</td>
<td>7 MiB (224 instances)</td>
</tr>
<tr>
<td>L2 cache:</td>
<td>224 MiB (224 instances)</td>
</tr>
<tr>
<td>L3 cache:</td>
<td>512 MiB (32 instances)</td>
</tr>
<tr>
<td>NUMA node(s):</td>
<td>8</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>0-27,224-251</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>28-55,252-279</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>56-83,280-307</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>84-111,308-335</td>
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<tr>
<td>NUMA node CPU(s):</td>
<td>112-139,336-363</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>140-167,364-391</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>168-195,392-419</td>
</tr>
<tr>
<td>NUMA node CPU(s):</td>
<td>196-223,420-447</td>
</tr>
</tbody>
</table>

- **Vulnerability Itlb multihit:** Not affected
- **Vulnerability L1tf:** Not affected
- **Vulnerability Mds:** Not affected
- **Vulnerability Meltdown:** Not affected
- **Vulnerability Spectre v1:** Mitigation; Speculative Store Bypass disabled via prctl and seccomp
- **Vulnerability Spectre v2:** Mitigation; Rtpolines, IBPB conditional, IBRS_FW, STIBP always-on, RSB filling
- **Vulnerability Srbd:** Not affected
- **Vulnerability Tsc async abort:** Not affected

### Memory

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
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<tbody>
<tr>
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<td>7M</td>
<td>8</td>
<td>Data</td>
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<td>64</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L1i</td>
<td>32K</td>
<td>7M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L2</td>
<td>1M</td>
<td>224M</td>
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<td>Unified</td>
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<td>2048</td>
<td>1</td>
<td>64</td>
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<td>L3</td>
<td>16M</td>
<td>512M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
<td>16384</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

---

8. numactl --hardware

*NOTE: a numactl 'node' might or might not correspond to a physical chip.*

available: 8 nodes (0-7)

- node 0 cpus: 0-27,224-251
- node 0 size: 193268 MB
- node 0 free: 192149 MB
- node 1 cpus: 28-55,252-279
- node 1 size: 193519 MB
- node 1 free: 193114 MB
- node 2 cpus: 56-83,280-307
- node 2 size: 193519 MB
- node 2 free: 193141 MB
- node 3 cpus: 84-111,308-335
- node 3 size: 193519 MB
- node 3 free: 192644 MB
- node 4 cpus: 112-139,336-363
- node 4 size: 193519 MB
- node 4 free: 193194 MB
- node 5 cpus: 140-167,364-391
- node 5 size: 193485 MB

(Continued on next page)
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Platform Notes (Continued)

node 5 free: 193152 MB
node 6 cpus: 168-195,392-419
node 6 size: 193519 MB
node 6 free: 193192 MB
node 7 cpus: 196-223,420-447
node 7 size: 193311 MB
node 7 free: 192605 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: 1584809180 kB

10. who -r
run-level 3 Nov 14 08:58

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
irbalance issue-generator kbdsettings klog lvme2-monitor nscd nvmeof-boot-connections
postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4
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-shel ebtables exchange-bmc-os-info
firewallD gpm grub2-once haveged-switch-root hwloc-dump-hwdata ipmi ipmiudev
issue-add-ssh-keys kekexec-load lvmmask man-db-create multipathd nfs nfs-bkmap
nvme-autoconnect rdisc rpicbind rpcconfigcheck 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 wicked

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:

(Continued on next page)
Platform Notes (Continued)

  current policy: frequency should be within 1.50 GHz and 2.00 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
  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/ktuple
  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: /aocczn4
  Filesystem    Type  Size  Used Avail Use% Mounted on
  (Continued on next page)
ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
(2.20 GHz, AMD EPYC 9734)

Specifications:

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

Platform Notes (Continued)

/dev/nvme0n1p4 xfs  2.0T  201G  1.9T  10% /

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

22. 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:
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: 1002
BIOS Date: 05/24/2023
BIOS Revision: 10.2

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)
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)
(Continued on next page)
ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
(2.20 GHz, AMD EPYC 9734)

Compiler Version Notes (Continued)

<table>
<thead>
<tr>
<th>557.xz_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)</td>
</tr>
<tr>
<td>Thread model: posix</td>
</tr>
<tr>
<td>InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin</td>
</tr>
</tbody>
</table>

---

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
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
**SPEC CPU®2017 Integer Rate Result**

**ASUSTeK Computer Inc.**

ASUS RS720A-E12-RS12
(2.20 GHz, AMD EPYC 9734)

<table>
<thead>
<tr>
<th>CPU2017 License: 9016</th>
<th>Test Date: Nov-2023</th>
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<tr>
<td>Test Sponsor: ASUSTeK Computer Inc.</td>
<td>Hardware Availability: Jun-2023</td>
</tr>
<tr>
<td>Tested by: ASUSTeK Computer Inc.</td>
<td>Software Availability: Nov-2022</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base = 1740**

**SPECrate®2017_int_peak = 1890**

---

**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 -finline=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 -flang
  - 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 -flang

(Continued on next page)
ASUSTeK Computer Inc.

ASUS RS720A-E12-RS12
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SPECrater®2017_int_base = 1740
Test Date: Nov-2023
Hardware Availability: Jun-2023
Software Availability: Nov-2022

SPECrater®2017_int_peak = 1890

Base Optimization Flags (Continued)

C++ benchmarks (continued):
- 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

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

(Continued on next page)
Peak Portability Flags (Continued)

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


C++ benchmarks:

ASUSTeK Computer Inc.
ASUS RS720A-E12-RS12
(2.20 GHz, AMD EPYC 9734)

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

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

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

(Continued on next page)
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Peak Other Flags (Continued)

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-asusv01.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc400-flags-asusv01.xml

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