## SPEC CPU®2017 Integer Rate Result

### ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9016</th>
<th>Test Date:</th>
<th>Apr-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>ASUSTeK Computer Inc.</td>
<td>Hardware Availability:</td>
<td>Nov-2019</td>
</tr>
<tr>
<td>Tested by:</td>
<td>ASUSTeK Computer Inc.</td>
<td>Software Availability:</td>
<td>Jun-2019</td>
</tr>
</tbody>
</table>

### SPECrate®2017 int_base = 58.3
SPECrate®2017 int_peak = 61.5

### Copies

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>500.perlbench_r</td>
<td>42.0</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>53.0</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>30.1</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>52.3</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>50.1</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>47.4</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>34.3</td>
</tr>
</tbody>
</table>

---

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>AMD EPYC 7232P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>3200</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3100</td>
</tr>
<tr>
<td>Enabled:</td>
<td>8 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>512 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>32 MB I+D on chip per chip, 8 MB shared / 2 cores</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 240 GB SATA SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

---

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 15 SP1 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++/Fortran: Version 2.0.0 of AOCC</td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 0501 released Nov-2019</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc; jemalloc memory allocator library v5.2.0</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

---

Page 1
## SPEC CPU®2017 Integer Rate Result

**ASUSTeK Computer Inc.**  
ASUS RS500A-E10(KRPA-U16) Server System  
3.10 GHz, AMD EPYC 7232P  

**SPECrate®2017_int_base = 58.3**  
**SPECrate®2017_int_peak = 61.5**

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>16</td>
<td>607</td>
<td><strong>42.0</strong></td>
<td>611</td>
<td>41.7</td>
<td>607</td>
<td>42.0</td>
<td>16</td>
<td>580</td>
<td>43.9</td>
<td>581</td>
<td><strong>43.8</strong></td>
<td>583</td>
<td>43.7</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>16</td>
<td>424</td>
<td><strong>53.5</strong></td>
<td>423</td>
<td>53.5</td>
<td>424</td>
<td>53.4</td>
<td>16</td>
<td>354</td>
<td><strong>64.0</strong></td>
<td>354</td>
<td>64.0</td>
<td>354</td>
<td>64.1</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>16</td>
<td>282</td>
<td>91.8</td>
<td>281</td>
<td><strong>92.0</strong></td>
<td>281</td>
<td>92.1</td>
<td>16</td>
<td>258</td>
<td>100</td>
<td>257</td>
<td><strong>101</strong></td>
<td>256</td>
<td>101</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>16</td>
<td><strong>698</strong></td>
<td><strong>30.1</strong></td>
<td>698</td>
<td>30.1</td>
<td>699</td>
<td>30.0</td>
<td>16</td>
<td>698</td>
<td><strong>30.1</strong></td>
<td>698</td>
<td>30.1</td>
<td>699</td>
<td>30.0</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>16</td>
<td>324</td>
<td>52.2</td>
<td><strong>323</strong></td>
<td><strong>52.3</strong></td>
<td>323</td>
<td>52.4</td>
<td>16</td>
<td>272</td>
<td><strong>62.2</strong></td>
<td>271</td>
<td>62.2</td>
<td>272</td>
<td>62.1</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>16</td>
<td><strong>230</strong></td>
<td><strong>122</strong></td>
<td>230</td>
<td>122</td>
<td>231</td>
<td>122</td>
<td>16</td>
<td>224</td>
<td><strong>125</strong></td>
<td>224</td>
<td>125</td>
<td>224</td>
<td>125</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>16</td>
<td><strong>366</strong></td>
<td><strong>50.1</strong></td>
<td>365</td>
<td>50.2</td>
<td>372</td>
<td>49.3</td>
<td>16</td>
<td>355</td>
<td>51.7</td>
<td>355</td>
<td><strong>51.6</strong></td>
<td>371</td>
<td>49.4</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>16</td>
<td>559</td>
<td>47.4</td>
<td><strong>559</strong></td>
<td><strong>47.4</strong></td>
<td>559</td>
<td>47.4</td>
<td>16</td>
<td>559</td>
<td>47.4</td>
<td>559</td>
<td><strong>47.4</strong></td>
<td>559</td>
<td>47.4</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>16</td>
<td>300</td>
<td>140</td>
<td><strong>298</strong></td>
<td><strong>141</strong></td>
<td>298</td>
<td>141</td>
<td>16</td>
<td>300</td>
<td>140</td>
<td><strong>298</strong></td>
<td><strong>141</strong></td>
<td>298</td>
<td>141</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>16</td>
<td>504</td>
<td>34.3</td>
<td>503</td>
<td>34.3</td>
<td><strong>504</strong></td>
<td><strong>34.3</strong></td>
<td>16</td>
<td>504</td>
<td>34.3</td>
<td><strong>504</strong></td>
<td><strong>34.3</strong></td>
<td>503</td>
<td>34.4</td>
</tr>
</tbody>
</table>

SPECrater®2017_int_base = 58.3  
SPECrater®2017_int_peak = 61.5

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  
'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>

Set dirty_ratio=8 to limit dirty cache to 8% of memory  
Set swappiness=1 to swap only if necessary  
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory  
sync then drop_caches=3 to reset caches before invoking runcpu

dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were  
all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

Transparent huge pages set to 'always' for this run (OS default)
### SPEC CPU®2017 Integer Rate Result

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>ASUSTeK Computer Inc.</td>
</tr>
<tr>
<td>Tested by:</td>
<td>ASUSTeK Computer Inc.</td>
</tr>
<tr>
<td>SPECrate®2017_int_base</td>
<td>58.3</td>
</tr>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>61.5</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Apr-2020</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Nov-2019</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Jun-2019</td>
</tr>
</tbody>
</table>

**ASUSTeK Computer Inc.**

ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

---

### Operating System Notes (Continued)

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

---

### Environment Variables Notes

Environment variables set by `runcpu` before the start of the run:

```
LD_LIBRARY_PATH = 
    "/spec2017c3/amd_rate_aocc200_rome_C_lib/64;/spec2017c3/amd_rate_aocc200 _rome_C_lib/32:" 
MALLOC_CONF = "retain:true"
```

---

### General Notes

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using Fedora 26

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.

jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
jemalloc 5.2.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.2.0/jemalloc-5.2.0.tar.bz2

---

### Platform Notes

BIOS Configuration:
Power phase shedding = Disabled
SVM Mode = Disabled
SR-IOV support = Disabled
DRAM Scrub time = Disabled
Determinism Slider = Power

Sysinfo program /spec2017c3/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011
running on linux-wv9n Wed Apr 1 09:38:22 2020

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo

---

(Continued on next page)
ASUSTeK Computer Inc.

ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

SPECrate®2017_int_base = 58.3
SPECrate®2017_int_peak = 61.5

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Apr-2020
Hardware Availability: Nov-2019
Tested by: ASUSTeK Computer Inc.
Software Availability: Jun-2019

Platform Notes (Continued)

model name : AMD EPYC 7232P 8-Core Processor
  1 "physical id"s (chips)
  16 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following
excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 8
siblings : 16
physical 0: cores 0 1 4 5 8 9 12 13

From lscpu:
Architecture:          x86_64
CPU op-mode(s):       32-bit, 64-bit
Byte Order:           Little Endian
Address sizes:        43 bits physical, 48 bits virtual
CPU(s):               16
On-line CPU(s) list:  0-15
Thread(s) per core:   2
Core(s) per socket:   8
Socket(s):            1
NUMA node(s):         1
Vendor ID:            AuthenticAMD
CPU family:           23
Model:                49
Model name:           AMD EPYC 7232P 8-Core Processor
Stepping:             0
CPU MHz:              3100.000
CPU max MHz:          3100.0000
CPU min MHz:          1500.0000
BogoMIPS:             6261.63
Virtualization:       AMD-V
L1d cache:            32K
L1i cache:            32K
L2 cache:             512K
L3 cache:             8192K
NUMA node0 CPU(s):    0-15
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 xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni
pclmulqdq monitor sse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c
rdseed rdrand lahf_lm cmp_legacy svm extapic csrt3 Legacy abm sse4a misalignsse 3dnowprefetch
osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxext perfctr_l2 mwaitx cpb
cat_l3 cdp_l3 hw_pstate sme ssbd sev ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep
bmi2 cmip3 rdt_a rseed adx smap clflushopt clwb sha ni xsaveopt xsaveopt xsave xsavefs
xsave lwp svmsave svmload vmprestart vsx vsarbitrate npb arat pni lbrv svm_lock nrip save tsc_scale vmcb_clean flushbyasid decodeassist pausefilter
pt threshold avic v_vmsave_vmload vgif umip rdpid overflow_recover succor smca

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

SPECrate®2017_int_base = 58.3
SPECrate®2017_int_peak = 61.5

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

Test Date: Apr-2020
Hardware Availability: Nov-2019
Software Availability: Jun-2019

Platform Notes (Continued)

/proc/cpuinfo cache data
  cache size : 512 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
  available: 1 nodes (0)
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  node 0 size: 515818 MB
  node 0 free: 515077 MB
  node distances:
  node 0
  0: 10

From /proc/meminfo
  MemTotal: 528197632 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15-SP1"
    VERSION_ID="15.1"
    PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
    ID="sles"
    ID_LIKE="suse"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
  Linux linux-wv9n 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB:
  conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Mar 31 16:25

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

SPECrate®2017_int_base = 58.3
SPECrate®2017_int_peak = 61.5

CPU2017 License: 9016
Test Date: Apr-2020
Test Sponsor: ASUSTeK Computer Inc.
Hardware Availability: Nov-2019
Tested by: ASUSTeK Computer Inc.
Software Availability: Jun-2019

Platform Notes (Continued)

SPEC is set to: /spec2017c3
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdd4 xfs 199G 18G 182G 10% /

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 0501 11/07/2019
Vendor: ASUSTeK COMPUTER INC.
Product: KRPA-U16 Series
Product Family: Server
Serial: System Serial Number

Additional information from dmidecode 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 Samsung M393A8G40AB2-CWE 64 kB 2 rank 3200
8x Unknown Unknown

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C | 502.gcc_r(peak)
------------------------------------------------------------------------------
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/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)
------------------------------------------------------------------------------
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------
C | 502.gcc_r(peak)

(Continued on next page)
ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

| SPECrate®2017_int_base = 58.3 |
| SPECrate®2017_int_peak = 61.5 |

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

Compiler Version Notes (Continued)

| AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
| AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19) |
| Target: i386-unknown-linux-gnu |
| Thread model: posix |
| InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin |

| AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins |
| AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19) |
| Target: x86_64-unknown-linux-gnu |
| Thread model: posix |
| InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin |

| AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins |
| AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19) |
| Target: x86_64-unknown-linux-gnu |
| Thread model: posix |
| InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin |

(Continued on next page)
ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

SPECrate®2017_int_base = 58.3
SPECrate®2017_int_peak = 61.5

Compiler Version Notes (Continued)

InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

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

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Fortran | 548.exchange2_r(base, peak) |

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/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

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

ASUSTeK Computer Inc.

ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

SPECrate®2017_int_base = 58.3
SPECrate®2017_int_peak = 61.5

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Apr-2020
Tested by: ASUSTeK Computer Inc.
Hardware Availability: Nov-2019
Software Availability: Jun-2019

Base Portability Flags (Continued)

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:
- -flto -Wl,-mlllvm -Wl,-function-specialize
- -Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
- -Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
- -march=znver2 -fstruct-layout=3 -mlllvm -unroll-threshold=50
- -fremap-arrays -mlllvm -function-specialize -mlllvm -enable-gvn-hoist
- -mlllvm -reduce-array-computations=3 -mlllvm -global-vectorize-slp
- -mlllvm -vector-library=LIBMVEC -mlllvm -inline-threshold=1000
- -flv-function-specialization -z muldefs -lmvec -lmamdlibm -ljemalloc
- -flvang

C++ benchmarks:
- -flto -Wl,-mlllvm -Wl,-function-specialize
- -Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
- -Wl,-mlllvm -Wl,-reduce-array-computations=3
- -Wl,-mlllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2
- -mlllvm -loop-unswitch-threshold=200000 -mlllvm -vector-library=LIBMVEC
- -mlllvm -unroll-threshold=100 -flv-function-specialization
- -mlllvm -enable-unswitch -z muldefs -lmvec -lmamdlibm
- -ljemalloc -flang

Fortran benchmarks:
- -flto -Wl,-mlllvm -Wl,-function-specialize
- -Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
- -Wl,-mlllvm -Wl,-reduce-array-computations=3 -ffast-math
- -Wl,-mlllvm -Wl,-inline-recursion=4 -Wl,-mlllvm -Wl,-lsr-in-nested-loop
- -Wl,-mlllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
- -flc -recursive -mlllvm -vector-library=LIBMVEC -z muldefs
- -mlllvm -disable-indvar-simplify -mlllvm -unroll-aggressive
- -mlllvm -unroll-threshold=150 -lmvec -lmamdlibm -ljemalloc -flang

Peak Compiler Invocation

C benchmarks:
clang

(Continued on next page)
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 -D_FILE_OFFSET_BITS=64
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: -flto -Wl,-mlvm -Wl,-function-specialize
-Wl,-mlvm -Wl,-region-vectorize
-Wl,-mlvm -Wl,-vector-library=LIBMVEC
-Wl,-mlvm -Wl,-reduce-array-computations=3
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -Ofast -march=znver2
-mno-sse4a -fstruct-layout=5
-mlvm -vectorize-memory-aggressively
-mlvm -function-specialize -mlvm -enable-qvn-hoist
-mlvm -unroll-threshold=50 -fremap-arrays
-mlvm -vector-library=LIBMVEC
-mlvm -reduce-array-computations=3
-mlvm -global-vectorize-slp -mlvm -inline-threshold=1000
-flv-function-specialization -lmvec -lamdlibm -ljemalloc
-lflang

(Continued on next page)
ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.10 GHz, AMD EPYC 7232P

SPECrate®2017_int_base = 58.3
SPECrate®2017_int_peak = 61.5

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Apr-2020
Tested by: ASUSTeK Computer Inc.
Hardware Availability: Nov-2019
Software Availability: Jun-2019

Peak Optimization Flags (Continued)

502.gcc_r: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
-mlllvm -Wl,-region-vectorize
-mlllvm -Wl,-vector-library=LIBMVEC
-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlllvm -vectorize-memory-aggressively
-mlllvm -function-specialize -mlllvm -enable-gvn-hoist
-mlllvm -unroll-threshold=50 -fremap-arrays
-mlllvm -vector-library=LIBMVEC
-mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp -mlllvm -inline-threshold=1000
-flv-function-specialization -fgnu89-inline -ljemalloc

505.mcf_r: -flto -Wl,-mllvm -Wl,-function-specialize
-mlllvm -Wl,-region-vectorize
-mlllvm -Wl,-vector-library=LIBMVEC
-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlllvm -vectorize-memory-aggressively
-mlllvm -function-specialize -mlllvm -enable-gvn-hoist
-mlllvm -unroll-threshold=50 -fremap-arrays
-mlllvm -vector-library=LIBMVEC
-mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp -mlllvm -inline-threshold=1000
-flv-function-specialization -lmvec -lamdlibm -ljemalloc
-flvlflags

525.x264_r: Same as 500.perlbench_r

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalanbmk_r: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
-mlllvm -Wl,-region-vectorize
-mlllvm -Wl,-vector-library=LIBMVEC
-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -flv-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -ljemalloc

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

531.deepsjeng_r: -flto -Wl,-mlllvm -Wl,-function-specialize
-ML -mlllvm -Wl,-region-vectorize
-ML -mlllvm -Wl,-vector-library=LIBMVEC
-ML -mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -flv-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -lmvec -lamdlibm -ljemalloc
       -llfmsg

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: basepeak = yes

Peak Other Flags

C benchmarks:

502.gcc_r: -L/sppo/dev/cpu2017/v110/amd_rate_aocc200_rome_C_lib/32

C++ benchmarks:

523.xalancbmk_r: -L/sppo/dev/cpu2017/v110/amd_rate_aocc200_rome_C_lib/32

The flags files that were used to format this result can be browsed at

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

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU®2017 v1.1.0 on 2020-03-31 21:38:21-0400.