## SPEC CPU®2017 Integer Speed Result

**ASUSTeK Computer Inc.**

ASUS RS500A-E10(KRPA-U16) Server System
3.20 GHz, AMD EPYC 7F72

|--------------------------------|--------------------------------|

### CPU2017 License
9016

### Test Sponsor
ASUSTeK Computer Inc.

### Tested by
ASUSTeK Computer Inc.

<table>
<thead>
<tr>
<th><strong>Threads</strong></th>
<th><strong>SPECspeed®2017_int_base (9.62)</strong></th>
<th><strong>SPECspeed®2017_int_peak (9.96)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>5.07</td>
<td>10.4</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>5.64</td>
<td>10.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>5.18</td>
<td>16.6</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>5.28</td>
<td>17.8</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>10.5</td>
<td>11.2</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>5.33</td>
<td>14.0</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.45</td>
<td>14.3</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>4.72</td>
<td>17.9</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>22.6</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** AMD EPYC 7F72
- **Max MHz:** 3700
- **Nominal:** 3200
- **Enabled:** 24 cores, 1 chip, 2 threads/core
- **Orderable:** 1 chip
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 512 KB I+D on chip per core
- **L3:** 192 MB I+D on chip per chip, 16 MB shared / 2 cores
- **Other:** None
- **Memory:** 512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 240 GB SATA SSD
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 15 SP1 (x86_64)
- **Kernel:** 4.12.14-195-default
- **Compiler:** C/C++/Fortran: Version 2.0.0 of AOCC
- **Parallel:** Yes
- **Firmware:** Version 0501 released Nov-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **Other:** jemalloc: jemalloc memory allocator library v5.1.0
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.
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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<td>350</td>
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<tr>
<td>605.mcf_s</td>
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<tr>
<td>623.xalanchmk_s</td>
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<td>24</td>
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<td>631.deepsjeng_s</td>
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<td>5.45</td>
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<tr>
<td>641.leela_s</td>
<td>24</td>
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<td>17.9</td>
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<td>17.9</td>
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<td>17.9</td>
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<tr>
<td>657.xz_s</td>
<td>24</td>
<td>274</td>
<td>22.6</td>
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<td>22.6</td>
<td>274</td>
<td>22.6</td>
<td>274</td>
<td>22.6</td>
</tr>
</tbody>
</table>

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)

(Continued on next page)
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SPECspeed®2017_int_base = 9.62
SPECspeed®2017_int_peak = 9.96

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:
GOMP_CPU_AFFINITY = "0-47"
LD_LIBRARY_PATH = 
   "/spec2017c3/amd_speed_aocc200_rome_C_lib/64;/spec2017c3/amd_speed_aocc2 
   00_rome_C_lib/32;" 
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "48"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"
OMP_STACKSIZE = "128M"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 648.exchange2_s peak run:
GOMP_CPU_AFFINITY = "0"

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)

(Continued on next page)
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<tr>
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<td>9.96</td>
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</tbody>
</table>

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

---

**General Notes (Continued)**

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 5.1.0 is available here:  
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2

---

**Platform Notes**

BIOS Configuration:
Power phase shedding = Disabled  
SVM Mode = Disabled  
SR-IOV support = Disabled  
DRAM Scrub time = Disabled  
NUMA nodes per socket = NPS2  
Determinism Slider = Power  
APBDIS = 1

Sysinfo program /spec2017c3/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7edbl46e46a485a0011  
running on linux-wv9n Thu Mar 12 23:04:42 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  
model name : AMD EPYC 7F72 24-Core Processor  
1 "physical id"s (chips)  
48 "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 : 24  
siblings : 48  
physical 0: cores 0 1 4 5 8 9 12 13 16 17 20 21 24 25 28 29 32 33 36 37 40 41 44 45

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): 48

(Continued on next page)
Platform Notes (Continued)

On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 1
NUMA node(s): 2
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7F72 24-Core Processor
Stepping: 0
CPU MHz: 3200.000
CPU max MHz: 3200.0000
CPU min MHz: 2500.0000
BogoMIPS: 6463.91
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-11,24-35
NUMA node1 CPU(s): 12-23,36-47
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 tsc_adjust voltage mon vlik pdpe32 osfia osfnia osfn p3p p3pke

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 24 25 26 27 28 29 30 31 32 33 34 35
node 0 size: 257837 MB
node 0 free: 257474 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 36 37 38 39 40 41 42 43 44 45 46 47
node 1 size: 257978 MB
node 1 free: 257512 MB
node distances:
node 0 1

(Continued on next page)
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SPECspeed®2017_int_base = 9.62
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CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Mar-2020
Tested by: ASUSTeK Computer Inc.
Hardware Availability: Apr-2020
Software Availability: Jun-2019

Platform Notes (Continued)

0:  10  12
1:  12  10

From /proc/meminfo
MemTotal:       528195408 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
un-level 3 Mar 12 09:06

SPEC is set to: /spec2017c3
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sdd4      xfs   199G  25G  175G  13% /

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

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

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

<table>
<thead>
<tr>
<th>Language</th>
<th>Compiler</th>
<th>Benchmark (Base/Peak)</th>
<th>Version</th>
<th>Target</th>
<th>Thread Model</th>
<th>Installed Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>600.perlbench_s</td>
<td>602.gcc_s</td>
<td>605.mcf_s</td>
<td>625.x264_s</td>
<td>657.xz_s</td>
<td>clang version 8.0.0 (CLANG: Jenkins AOCC.LLVM.2.0.0.B191.2019_07_19) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)</td>
</tr>
<tr>
<td>C++</td>
<td>620.omnetpp_s</td>
<td>623.xalancbmk_s</td>
<td>clang version 8.0.0 (CLANG: Jenkins AOCC.LLVM.2.0.0.B191.2019_07_19) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)</td>
<td>/sppo/dev/compilers/aocc-compiler-2.0.0/bin</td>
<td></td>
<td></td>
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<tr>
<td>C++</td>
<td>631.deepsjeng_s</td>
<td>641.leela_s</td>
<td>clang version 8.0.0 (CLANG: Jenkins AOCC.LLVM.2.0.0.B191.2019_07_19) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)</td>
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</table>

(Continued on next page)
Compiler Version Notes (Continued)

C++ | 623.xalancbmk_s(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++ | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)
  631.deepsjeng_s(base, peak) 641.leela_s(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 | 648.exchange2_s(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
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Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-ffto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
-march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50
-fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
-flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-lflang

C++ benchmarks:
-ffto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2
-mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC
-mllvm -unroll-threshold=100 -flv-function-specialization
-mllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-lflang

Fortran benchmarks:
-ffto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
-Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs
-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive

(Continued on next page)
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Tested by: ASUSTeK Computer Inc.
Test Date: Mar-2020
Hardware Availability: Apr-2020
Software Availability: Jun-2019

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

Base Other Flags

C benchmarks:
-Wno-return-type

C++ benchmarks:
-Wno-return-type

Fortran benchmarks:
-Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak Portability Flags

600.perlbench_s -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s -DSPEC_LP64
605.mcf_s -DSPEC_LP64
620.omnetpp_s -DSPEC_LP64
623.xalanchmk_s -DSPEC_LINUX -D_FILE_OFFSET_BITS=64
625.x264_s -DSPEC_LP64
631.deepsjeng_s -DSPEC_LP64
641.leela_s -DSPEC_LP64
648.exchange2_s -DSPEC_LP64
657.xz_s -DSPEC_LP64
Peak Optimization Flags

C benchmarks:

600.perlbench_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3
-fprofile-instr-generate(pass1)
-fprofile-instr-use(pass2) -Ofast -march=znver2
-mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-lmvec -lamlibm -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc -lflang

602.gcc_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -z muldefs -DSPEC_OPENMP
-fopenmp -fgnu89-inline -fopenmp=libomp -lomp -lpthread
-ldl -ljemalloc

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

(Continued on next page)
ASUSTeK Computer Inc.
ASUS RS500A-E10(KRPA-U16) Server System
3.20 GHz, AMD EPYC 7F72

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

SPECspeed®2017_int_base = 9.62
SPECspeed®2017_int_peak = 9.96

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

Peak Optimization Flags (Continued)

605.mcf_s (continued):
- lmvec - lamdlibm - fopenmp=libomp - lomp - lpthread - ld1
- ljemalloc - lflang

625.x264_s: Same as 600.perlbench_s

657.xz_s: basepeak = yes

C++ benchmarks:
620.omnetpp_s: -flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
- march=znver2 - flv-function-specialization
- mllvm - unroll-threshold=100
- mllvm - enable-partial-unswitch
- mllvm - loop-unswitch-threshold=200000
- mllvm - vector-library=LIBMVEC
- mllvm - inline-threshold=1000 -DSPEC_OPENMP - fopenmp
- fopenmp=libomp - lomp - lpthread - ld1 - lmvec - lamdlibm
- ljemalloc - lflang

623.xalancbmk_s: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
- march=znver2 - flv-function-specialization
- mllvm - unroll-threshold=100
- mllvm - enable-partial-unswitch
- mllvm - loop-unswitch-threshold=200000
- mllvm - vector-library=LIBMVEC
- mllvm - inline-threshold=1000 -DSPEC_OPENMP - fopenmp
- fopenmp=libomp - lomp - lpthread - ld1 - ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: basepeak = yes

Fortran benchmarks:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math
- Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
- Wl,-mllvm -Wl,-enable-iv-split -O3 -tune=znver2 -funroll-loops
- Mrecursive -mllvm -vector-library=LIBMVEC

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

**ASUSTeK Computer Inc.**

ASUS RS500A-E10(KRPA-U16) Server System
3.20 GHz, AMD EPYC 7F72

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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</thead>
<tbody>
<tr>
<td>9.62</td>
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</tbody>
</table>

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

### Peak Optimization Flags (Continued)

**Fortran benchmarks (continued):**
- `-mllvm -disable-indvar-simplify`  
- `-mllvm -unroll-aggressive`  
- `-mllvm -unroll-threshold=150`  
- `-DSPEC_OPENMP -fopenmp -fopenmp=libomp`  
- `-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

### Peak Other Flags

**C benchmarks:**
- `-Wno-return-type`

**C++ benchmarks (except as noted below):**
- `-Wno-return-type`

**623.xalancbmk.s:** `-Wno-return-type`  
- `-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32`

**Fortran benchmarks:**
- `-Wno-return-type`

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:


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