SPEC CPU®2017 Integer Speed Result

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ASUSTeK Computer Inc.

ASUS RS500A-E10(KRPA-U16) Server System
2.80 GHz, AMD EPYC 7402P

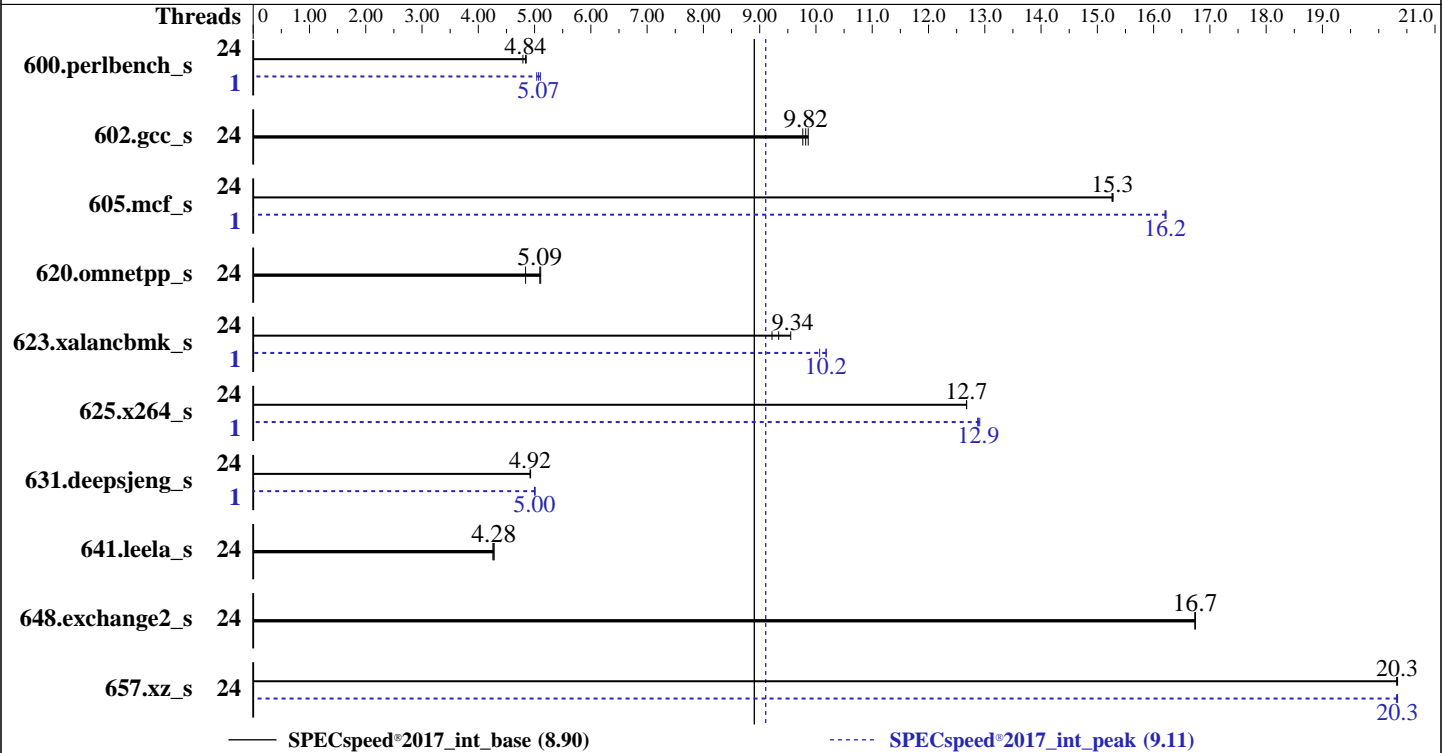$SPECspeed^{®}2017\_int\_base = 8.90$

$SPECspeed^{®}2017\_int\_peak = 9.11$

CPU2017 License:	9016	**Test Date:**	Oct-2019
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Aug-2019
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Aug-2019

Threads

- 600.perlbench_s — 24: 4.84, 1: 5.07
- 602.gcc_s — 24: 9.82
- 605.mcf_s — 24: 15.3, 1: 16.2
- 620.omnetpp_s — 24: 5.09
- 623.xalancbmk_s — 24: 9.34, 1: 10.2
- 625.x264_s — 24: 12.7, 1: 12.9
- 631.deepsjeng_s — 24: 4.92, 1: 5.00
- 641.leela_s — 24: 4.28
- 648.exchange2_s — 24: 16.7
- 657.xz_s — 24: 20.3, 1: 20.3

SPECspeed®2017_int_base (8.90)   SPECspeed®2017_int_peak (9.11)

Hardware

CPU Name: AMD EPYC 7402P
 Max MHz: 3350
 Nominal: 2800
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: 128 MB I+D on chip per chip,
 16 MB shared / 3 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 0302 released Aug-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: --

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	24	370	4.79	**367**	**4.84**	366	4.85	1	348	5.10	352	5.04	**350**	**5.07**
602.gcc_s	24	**406**	**9.82**	404	9.86	408	9.77	24	**406**	**9.82**	404	9.86	408	9.77
605.mcf_s	24	309	15.3	**309**	**15.3**	309	15.3	1	291	16.2	**291**	**16.2**	291	16.2
620.omnetpp_s	24	337	4.84	319	5.11	**320**	**5.09**	24	337	4.84	319	5.11	**320**	**5.09**
623.xalancbmk_s	24	**152**	**9.34**	148	9.55	154	9.22	1	141	10.1	**139**	**10.2**	139	10.2
625.x264_s	24	139	12.7	139	12.7	**139**	**12.7**	1	137	12.9	137	12.9	**137**	**12.9**
631.deepsjeng_s	24	291	4.92	**291**	**4.92**	291	4.93	1	286	5.01	287	5.00	**287**	**5.00**
641.leela_s	24	399	4.28	401	4.26	**399**	**4.28**	24	399	4.28	401	4.26	**399**	**4.28**
648.exchange2_s	24	176	16.7	**176**	**16.7**	176	16.7	24	176	16.7	**176**	**16.7**	176	16.7
657.xz_s	24	304	20.3	304	20.3	**304**	**20.3**	24	**304**	**20.3**	304	20.3	304	20.3
SPECspeed®2017_int_base =		**8.90**												
SPECspeed®2017_int_peak =		**9.11**												

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)
```

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-47"
LD_LIBRARY_PATH =
      "/spec2017c1/amd_speed_aocc200_rome_C_lib/64;/spec2017c1/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 605.mcf_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 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-23"
```

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

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$SPECspeed®2017\_int\_base = 8.90$

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

Test Date: Oct-2019
Hardware Availability: Aug-2019
Software Availability: Aug-2019

Platform Notes

```
BIOS Configuration:
Power phase shedding = Disabled
SVM Mode = Disabled
SR-IOV support = Disabled
DRAM Scrub time = Disabled
NUMA nodes per socket = NPS4
Determinism Slider = Power

 Sysinfo program /spec2017c1/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on linux-k4o7 Mon Oct 14 17:24:12 2019

 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 7402P 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 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30

 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
    On-line CPU(s) list: 0-47
    Thread(s) per core:  2
    Core(s) per socket:  24
    Socket(s):           1
    NUMA node(s):        4
    Vendor ID:           AuthenticAMD
    CPU family:          23
    Model:               49
    Model name:          AMD EPYC 7402P 24-Core Processor
    Stepping:            0
    CPU MHz:             2800.000
    CPU max MHz:         2800.0000
    CPU min MHz:         1500.0000
    BogoMIPS:            5656.24
    Virtualization:      AMD-V
```

(Continued on next page)

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SPECspeed®2017_int_base = 8.90

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Platform Notes (Continued)

```
        L1d cache:              32K
        L1i cache:              32K
        L2 cache:               512K
        L3 cache:               16384K
        NUMA node0 CPU(s):      0-5,24-29
        NUMA node1 CPU(s):      6-11,30-35
        NUMA node2 CPU(s):      12-17,36-41
        NUMA node3 CPU(s):      18-23,42-47
        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 xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni
    pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 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_l2 mwaitx cpb
    cat_l3 cdp_l3 hw_pstate sme ssbd sev ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep
    bmi2 cqm rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves
    cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr arat npt
    lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
    pfthreshold avic v_vmsave_vmload vgif umip rdpid overflow_recov succor smca


 /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: 4 nodes (0-3)
   node 0 cpus: 0 1 2 3 4 5 24 25 26 27 28 29
   node 0 size: 128826 MB
   node 0 free: 128533 MB
   node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
   node 1 size: 128982 MB
   node 1 free: 128716 MB
   node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
   node 2 size: 129011 MB
   node 2 free: 128839 MB
   node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
   node 3 size: 128996 MB
   node 3 free: 128755 MB
   node distances:
   node   0   1   2   3
     0:  10  12  12  12
     1:  12  10  12  12
     2:  12  12  10  12
     3:  12  12  12  10

 From /proc/meminfo
   MemTotal:       528196216 kB
```

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Software Availability: Aug-2019

Platform Notes (Continued)

```
    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-k4o7 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 Oct 14 17:23

 SPEC is set to: /spec2017c1
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda4       xfs   199G   39G  161G  20% /

 From /sys/devices/virtual/dmi/id
    BIOS:    American Megatrends Inc. 0302 08/07/2019
    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.
```

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Platform Notes (Continued)

```
     Memory:
        8x Samsung M393A8G40AB2-CWE 64 kB 2 rank 3200
        8x Unknown Unknown

   (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base,
         | peak) 625.x264_s(base, peak) 657.xz_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
------------------------------------------------------------------------------


==============================================================================
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
------------------------------------------------------------------------------


==============================================================================
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
```

(Continued on next page)

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Software Availability: Aug-2019

Compiler Version Notes (Continued)

```
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`

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`

(Continued on next page)

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Base Portability Flags (Continued)

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:
```
-flto -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
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang
```

C++ 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
-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
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang
```

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 -march=znver2 -funroll-loops
-Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs
-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-lflang
```

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Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2019
Hardware Availability: Aug-2019
Software Availability: Aug-2019

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.xalancbmk_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`

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

ASUSTeK Computer Inc.

ASUS RS500A-E10(KRPA-U16) Server System
2.80 GHz, AMD EPYC 7402P

SPECspeed®2017_int_base = 8.90

SPECspeed®2017_int_peak = 9.11

CPU2017 License:	9016	**Test Date:**	Oct-2019
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Aug-2019
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Aug-2019

Peak Optimization Flags (Continued)

600.perlbench_s (continued):
```
-Wl,-mllvm -Wl,-reduce-array-computations=3
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -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
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang
```

602.gcc_s: basepeak = yes

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
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang
```

625.x264_s: Same as 600.perlbench_s

657.xz_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
```

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Peak Optimization Flags (Continued)

657.xz_s (continued):
```
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lmvec -lamdlibm -ljemalloc -lflang
```

C++ benchmarks:

620.omnetpp_s: basepeak = yes

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
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc
```

631.deepsjeng_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
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lmvec -lamdlibm -ljemalloc -lflang
```

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

Peak Other Flags

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

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ASUSTeK Computer Inc.

ASUS RS500A-E10(KRPA-U16) Server System
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CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
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Test Date: Oct-2019
Hardware Availability: Aug-2019
Software Availability: Aug-2019

Peak Other Flags (Continued)

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
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-Rome-V1.0-revA.2019-11-12.html
http://www.spec.org/cpu2017/flags/aocc200-flags-A1.2019-09-17.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-Rome-V1.0-revA.2019-11-12.xml
http://www.spec.org/cpu2017/flags/aocc200-flags-A1.2019-09-17.xml

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

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