



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

CPU2017 License: 9016

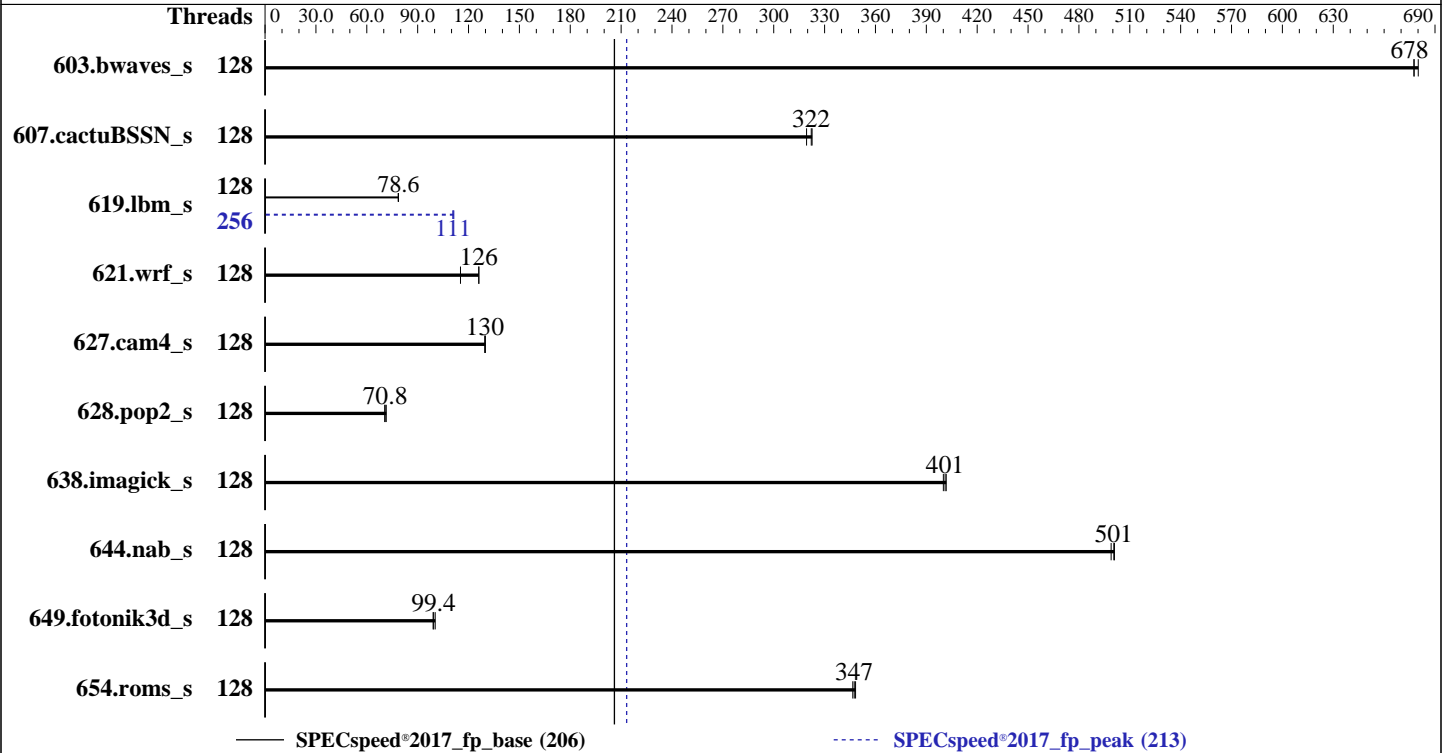
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Feb-2020

Hardware Availability: Dec-2019

Software Availability: Jun-2019



Hardware

CPU Name: AMD EPYC 7742
 Max MHz: 3400
 Nominal: 2250
 Enabled: 128 cores, 2 chips, 2 threads/core
 Orderable: 1,2 chips
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 256 MB I+D on chip per chip,
 16 MB shared / 4 cores
 Other: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
 Storage: 1 x 1 TB 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 0401 released Dec-2019
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 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



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECSpeed®2017_fp_base = 206

SPECSpeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Results Table

Benchmark	Base						Peak							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	128	87.1	678	86.7	680	87.1	678	128	87.1	678	86.7	680	87.1	678
607.cactuBSSN_s	128	51.7	322	52.2	319	51.7	323	128	51.7	322	52.2	319	51.7	323
619.lbm_s	128	66.6	78.6	66.6	78.7	66.6	78.6	256	47.0	111	47.2	111	47.3	111
621.wrf_s	128	115	115	105	126	105	126	128	115	115	105	126	105	126
627.cam4_s	128	68.3	130	68.3	130	68.2	130	128	68.3	130	68.3	130	68.2	130
628.pop2_s	128	168	70.8	166	71.5	168	70.6	128	168	70.8	166	71.5	168	70.6
638.imagick_s	128	36.1	400	36.0	401	35.9	402	128	36.1	400	36.0	401	35.9	402
644.nab_s	128	34.9	501	34.9	501	35.0	499	128	34.9	501	34.9	501	35.0	499
649.fotonik3d_s	128	92.0	99.1	91.7	99.4	90.8	100	128	92.0	99.1	91.7	99.4	90.8	100
654.roms_s	128	45.2	348	45.3	347	45.4	347	128	45.2	348	45.3	347	45.4	347

SPECSpeed®2017_fp_base = **206**

SPECSpeed®2017_fp_peak = **213**

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)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

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 = "0-255"
LD_LIBRARY_PATH =
"/spec2017c1/amd_speed_aocc200_rome_C_lib/64;/spec2017c1/amd_speed_aocc200_rome_C_lib/32:"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "256"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0 128 1 129 2 130 3 131 4 132 5 133 6 134 7 135 8 136 9
137 10 138 11 139 12 140 13 141 14 142 15 143 16 144 17 145 18 146 19
147 20 148 21 149 22 150 23 151 24 152 25 153 26 154 27 155 28 156 29
157 30 158 31 159 32 160 33 161 34 162 35 163 36 164 37 165 38 166 39
167 40 168 41 169 42 170 43 171 44 172 45 173 46 174 47 175 48 176 49
177 50 178 51 179 52 180 53 181 54 182 55 183 56 184 57 185 58 186 59
187 60 188 61 189 62 190 63 191 64 192 65 193 66 194 67 195 68 196 69
197 70 198 71 199 72 200 73 201 74 202 75 203 76 204 77 205 78 206 79
207 80 208 81 209 82 210 83 211 84 212 85 213 86 214 87 215 88 216 89
217 90 218 91 219 92 220 93 221 94 222 95 223 96 224 97 225 98 226 99
227 100 228 101 229 102 230 103 231 104 232 105 233 106 234 107 235 108
236 109 237 110 238 111 239 112 240 113 241 114 242 115 243 116 244 117
245 118 246 119 247 120 248 121 249 122 250 123 251 124 252 125 253 126
254 127 255"

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>



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Platform Notes

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

Sysinfo program /spec2017cl/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on linux-fkvs Fri Feb 7 16:42:42 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 7742 64-Core Processor
2 "physical id"s (chips)
256 "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 : 64
siblings : 128
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

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): 256
On-line CPU(s) list: 0-255
Thread(s) per core: 2
Core(s) per socket: 64
Socket(s): 2
NUMA node(s): 2
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7742 64-Core Processor
Stepping: 0

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Platform Notes (Continued)

```

CPU MHz:                2250.000
CPU max MHz:            2250.0000
CPU min MHz:            1500.0000
BogoMIPS:               4545.07
Virtualization:        AMD-V
L1d cache:              32K
L1i cache:              32K
L2 cache:               512K
L3 cache:               16384K
NUMA node0 CPU(s):     0-63,128-191
NUMA node1 CPU(s):     64-127,192-255
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 x2apic movbe popcnt aes xsave avx
f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse
3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
perfctr_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: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56
57 58 59 60 61 62 63 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143
144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165
166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187
188 189 190 191
node 0 size: 515858 MB
node 0 free: 514768 MB
node 1 cpus: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88
89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 192 193 194 195 196 197 198
199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220
221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242
243 244 245 246 247 248 249 250 251 252 253 254 255
node 1 size: 516036 MB
node 1 free: 515342 MB
node distances:

```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Platform Notes (Continued)

```
node    0    1
0:     10   32
1:     32   10
```

```
From /proc/meminfo
MemTotal:      1056660408 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-fkvs 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 Feb 7 16:42
```

```
SPEC is set to: /spec2017c1
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda4       xfs   929G   38G  892G   5% /
```

```
From /sys/devices/virtual/dmi/id
BIOS:      American Megatrends Inc. 0401 12/27/2019
Vendor:    ASUSTeK COMPUTER INC.
Product:   KNPP-D32-R Series
Product Family: Server
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Platform Notes (Continued)

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:

16x Samsung M393A8G40AB2-CWE 64 kB 2 rank 3200
16x Unknown Unknown

(End of data from sysinfo program)

Compiler Version Notes

=====
C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
644.nab_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++, C, Fortran | 607.cactuBSSN_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

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)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Compiler Version Notes (Continued)

Fortran | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
| 654.roms_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, C | 621.wrf_s(base, peak) 627.cam4_s(base, peak)
| 628.pop2_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
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

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Base Portability Flags

603.bwaves_s: -DSPEC_LP64

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Base Portability Flags (Continued)

```
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_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
-freemap-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
```

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 -O3 -march=znver2
-funroll-loops -Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs
-Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp -DUSE_OPENMP
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-lflang
```

Benchmarks using both Fortran and C:

```
-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
-freemap-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 -funroll-loops -Mrecursive -z muldefs
-Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp -DUSE_OPENMP
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206
SPECspeed®2017_fp_peak = 213

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):

-lflang

Benchmarks using Fortran, C, and C++:

```
-std=c++98 -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
-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 -mllvm -loop-unswitch-threshold=200000
-mllvm -unroll-threshold=100 -mllvm -enable-partial-unswitch
-funroll-loops -Mrecursive -z muldefs -Kieee -fno-finite-math-only
-DSPEC_OPENMP -fopenmp -DUSE_OPENMP -fopenmp=libomp -lomp -lpthread
-ldl -lmvec -lamdlibm -ljemalloc -lflang
```

Base Other Flags

C benchmarks:

-Wno-return-type

Fortran benchmarks:

-Wno-return-type

Benchmarks using both Fortran and C:

-Wno-return-type

Benchmarks using Fortran, C, and C++:

-Wno-return-type

Peak Compiler Invocation

C benchmarks:

clang

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206

SPECspeed®2017_fp_peak = 213

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Feb-2020

Hardware Availability: Dec-2019

Software Availability: Jun-2019

Peak Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:

clang++ clang flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
619.lbm_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
```

638.imagick_s: basepeak = yes

644.nab_s: basepeak = yes

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
2.25 GHz, AMD EPYC 7742

SPECspeed®2017_fp_base = 206

SPECspeed®2017_fp_peak = 213

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Feb-2020

Hardware Availability: Dec-2019

Software Availability: Jun-2019

Peak Optimization Flags (Continued)

621.wrf_s: basepeak = yes

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

Peak Other Flags

C benchmarks:

-Wno-return-type

Fortran benchmarks:

-Wno-return-type

Benchmarks using both Fortran and C:

-Wno-return-type

Benchmarks using Fortran, C, and C++:

-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-revD.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-revD.xml>

<http://www.spec.org/cpu2017/flags/aocc200-flags-A1.2019-09-17.xml>

SPEC CPU and SPECspeed 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 2020-02-07 03:42:41-0500.

Report generated on 2020-03-16 11:46:50 by CPU2017 PDF formatter v6255.

Originally published on 2020-03-16.