



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

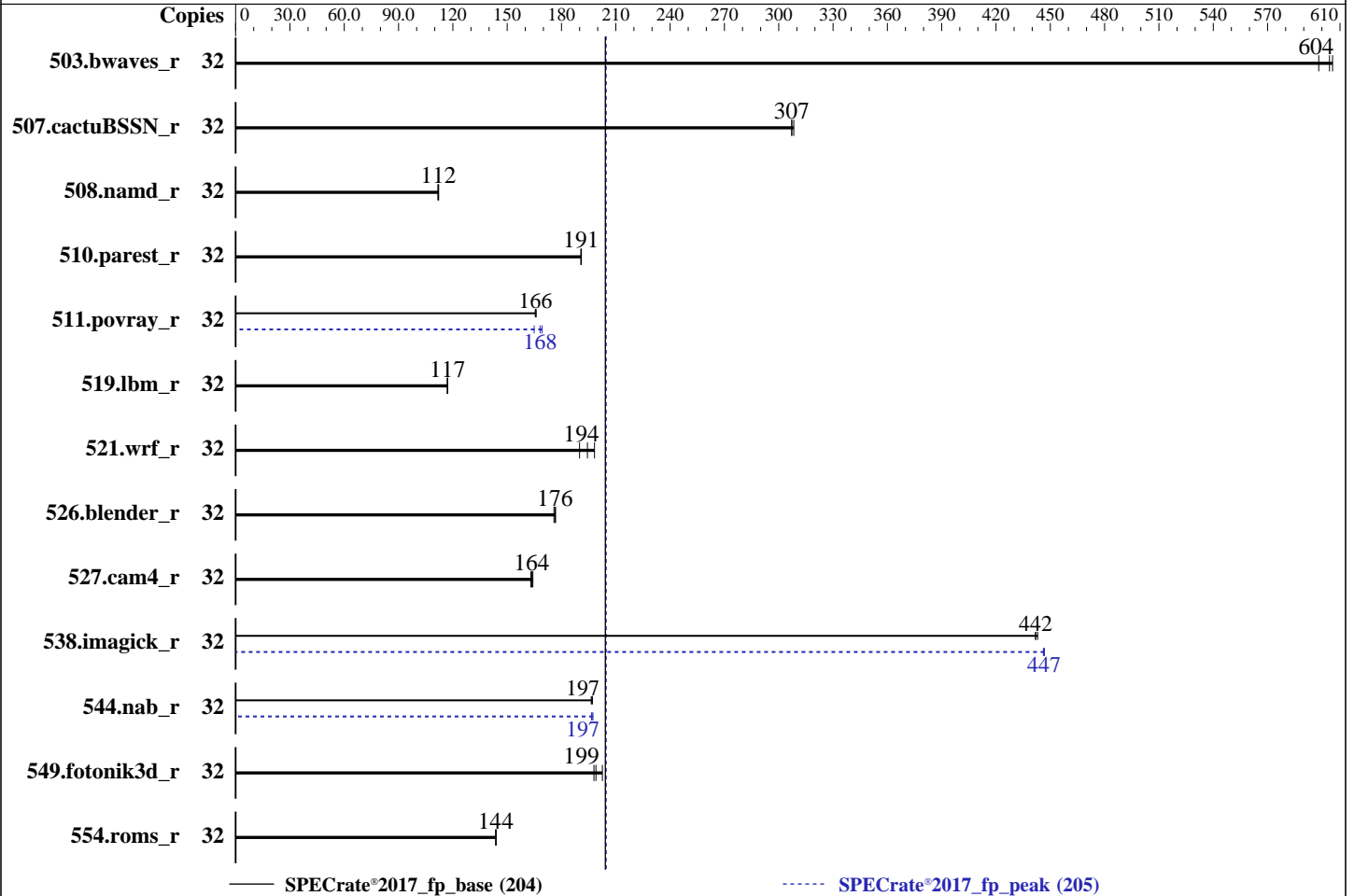
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019



Hardware

CPU Name: AMD EPYC 7F32
 Max MHz: 3900
 Nominal: 3700
 Enabled: 16 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: 128 MB I+D on chip per chip, 16 MB per core
 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: No
 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 v5.2.0
 Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|-----------------|--------|------------|------------|------------|------------|------------|------------|--------|------------|------------|------------|------------|------------|------------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 503.bwaves_r | 32 | 536 | 598 | 530 | 606 | 531 | 604 | 32 | 536 | 598 | 530 | 606 | 531 | 604 |
| 507.cactuBSSN_r | 32 | 132 | 307 | 131 | 308 | 132 | 307 | 32 | 132 | 307 | 131 | 308 | 132 | 307 |
| 508.namd_r | 32 | 271 | 112 | 271 | 112 | 272 | 112 | 32 | 271 | 112 | 271 | 112 | 272 | 112 |
| 510.parest_r | 32 | 439 | 191 | 438 | 191 | 439 | 191 | 32 | 439 | 191 | 438 | 191 | 439 | 191 |
| 511.povray_r | 32 | 451 | 166 | 451 | 166 | 450 | 166 | 32 | 444 | 168 | 441 | 169 | 453 | 165 |
| 519.lbm_r | 32 | 289 | 117 | 288 | 117 | 288 | 117 | 32 | 289 | 117 | 288 | 117 | 288 | 117 |
| 521.wrf_r | 32 | 377 | 190 | 362 | 198 | 369 | 194 | 32 | 377 | 190 | 362 | 198 | 369 | 194 |
| 526.blender_r | 32 | 277 | 176 | 276 | 176 | 276 | 177 | 32 | 277 | 176 | 276 | 176 | 276 | 177 |
| 527.cam4_r | 32 | 341 | 164 | 342 | 164 | 343 | 163 | 32 | 341 | 164 | 342 | 164 | 343 | 163 |
| 538.imagick_r | 32 | 180 | 442 | 180 | 442 | 180 | 443 | 32 | 178 | 446 | 178 | 447 | 178 | 447 |
| 544.nab_r | 32 | 274 | 197 | 273 | 197 | 274 | 196 | 32 | 274 | 197 | 273 | 197 | 274 | 197 |
| 549.fotonik3d_r | 32 | 630 | 198 | 627 | 199 | 616 | 203 | 32 | 630 | 198 | 627 | 199 | 616 | 203 |
| 554.roms_r | 32 | 354 | 144 | 354 | 144 | 353 | 144 | 32 | 354 | 144 | 354 | 144 | 353 | 144 |

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019

Operating System Notes (Continued)

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)
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
NUMA nodes per socket = NPS4
Determinism Slider = Power

Sysinfo program /spec2017c3/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on linux-fkvs Wed Mar 11 18:19:26 2020

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019

Platform Notes (Continued)

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 7F32 8-Core Processor

2 "physical id"s (chips)

32 "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 4 8 12 16 20 24 28

physical 1: cores 0 4 8 12 16 20 24 28

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): 32

On-line CPU(s) list: 0-31

Thread(s) per core: 2

Core(s) per socket: 8

Socket(s): 2

NUMA node(s): 8

Vendor ID: AuthenticAMD

CPU family: 23

Model: 49

Model name: AMD EPYC 7F32 8-Core Processor

Stepping: 0

CPU MHz: 3700.000

CPU max MHz: 3700.0000

CPU min MHz: 2500.0000

BogoMIPS: 7474.48

Virtualization: AMD-V

L1d cache: 32K

L1i cache: 32K

L2 cache: 512K

L3 cache: 16384K

NUMA node0 CPU(s): 0,1,16,17

NUMA node1 CPU(s): 2,3,18,19

NUMA node2 CPU(s): 4,5,20,21

NUMA node3 CPU(s): 6,7,22,23

NUMA node4 CPU(s): 8,9,24,25

NUMA node5 CPU(s): 10,11,26,27

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019

Platform Notes (Continued)

NUMA node6 CPU(s): 12,13,28,29

NUMA node7 CPU(s): 14,15,30,31

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 vmcall 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: 8 nodes (0-7)

node 0 cpus: 0 1 16 17

node 0 size: 128825 MB

node 0 free: 128637 MB

node 1 cpus: 2 3 18 19

node 1 size: 129022 MB

node 1 free: 128872 MB

node 2 cpus: 4 5 20 21

node 2 size: 128993 MB

node 2 free: 128859 MB

node 3 cpus: 6 7 22 23

node 3 size: 129010 MB

node 3 free: 128833 MB

node 4 cpus: 8 9 24 25

node 4 size: 129022 MB

node 4 free: 128898 MB

node 5 cpus: 10 11 26 27

node 5 size: 129022 MB

node 5 free: 128883 MB

node 6 cpus: 12 13 28 29

node 6 size: 129022 MB

node 6 free: 128897 MB

node 7 cpus: 14 15 30 31

node 7 size: 129022 MB

node 7 free: 128899 MB

node distances:

```
node 0 1 2 3 4 5 6 7
0: 10 12 12 12 32 32 32 32
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019

Platform Notes (Continued)

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 1: | 12 | 10 | 12 | 12 | 32 | 32 | 32 | 32 |
| 2: | 12 | 12 | 10 | 12 | 32 | 32 | 32 | 32 |
| 3: | 12 | 12 | 12 | 10 | 32 | 32 | 32 | 32 |
| 4: | 32 | 32 | 32 | 32 | 10 | 12 | 12 | 12 |
| 5: | 32 | 32 | 32 | 32 | 12 | 10 | 12 | 12 |
| 6: | 32 | 32 | 32 | 32 | 12 | 12 | 10 | 12 |
| 7: | 32 | 32 | 32 | 32 | 12 | 12 | 12 | 10 |

From /proc/meminfo

```
MemTotal:      1056707680 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 Mar 10 12:01

SPEC is set to: /spec2017c3

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|------------|------|------|------|-------|------|------------|
| /dev/sda4 | xfs | 929G | 53G | 877G | 6% | / |

From /sys/devices/virtual/dmi/id

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204

SPECrate®2017_fp_peak = 205

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Jun-2019

Platform Notes (Continued)

BIOS: American Megatrends Inc. 0401 12/27/2019
Vendor: ASUSTeK COMPUTER INC.
Product: KNPP-D32-R 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:

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

(End of data from sysinfo program)

Compiler Version Notes

```
=====
C          | 519.lbm_r(base, peak) 538.imagick_r(base, peak)
          | 544.nab_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++       | 508.namd_r(base, peak) 510.parest_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++, C    | 511.povray_r(base, peak) 526.blender_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
=====
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

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

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

Compiler Version Notes (Continued)

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

=====
C++, C, Fortran | 507.cactuBSSN_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
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

=====
Fortran | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
| 554.roms_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, C | 521.wrf_r(base, peak) 527.cam4_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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

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

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

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: 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

Benchmarks using both Fortran and C:
flang clang

Benchmarks using both C and C++:
clang++ clang

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

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
526.blender_r: -funsigned-char -D__BOOL_DEFINED -DSPEC_LP64
527.cam4_r: -DSPEC_CASE_FLAG -DSPEC_LP64
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

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

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

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 -lmvec -lamdlibm -ljemalloc
-lflang
```

C++ benchmarks:

```
-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
-mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC
-mllvm -unroll-threshold=100 -flv-function-specialization
-mllvm -enable-partial-unswitch -z muldefs -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 -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 -lmvec -lamdlibm -ljemalloc -lflang
```

Benchmarks using both 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 -freemap-arrays
-mllvm -function-specialize -mllvm -enable-gvn-hoist
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

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

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

Base Optimization Flags (Continued)

Benchmarks using both C and C++ (continued):

```
-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 -z muldefs
-lmvec -lamdlibm -ljemalloc -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
-lmvec -lamdlibm -ljemalloc -lflang
```

Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using both C and C++:

clang++ clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

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

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

```
538.imagick_r: -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 -lmvec -lamdlibm -ljemalloc
-lflang
```

544.nab_r: Same as 538.imagick_r

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: basepeak = yes

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

554.roms_r: basepeak = yes

Benchmarks using both Fortran and C:

521.wrf_r: basepeak = yes

527.cam4_r: basepeak = yes

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS700A-E9V2(KNPP-D32-R) Server System
3.70 GHz, AMD EPYC 7F32

SPECrate®2017_fp_base = 204
SPECrate®2017_fp_peak = 205

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

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

Peak Optimization Flags (Continued)

Benchmarks using both C and C++:

```
511.povray_r: -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,-x86-use-vzeroupper=false -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 -mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000 -lmvec -lamdlibm
-ljemalloc -lflang
```

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

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

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 2020-03-11 06:19:25-0400.
Report generated on 2020-04-14 10:25:56 by CPU2017 PDF formatter v6255.
Originally published on 2020-04-14.