



SPEC® CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

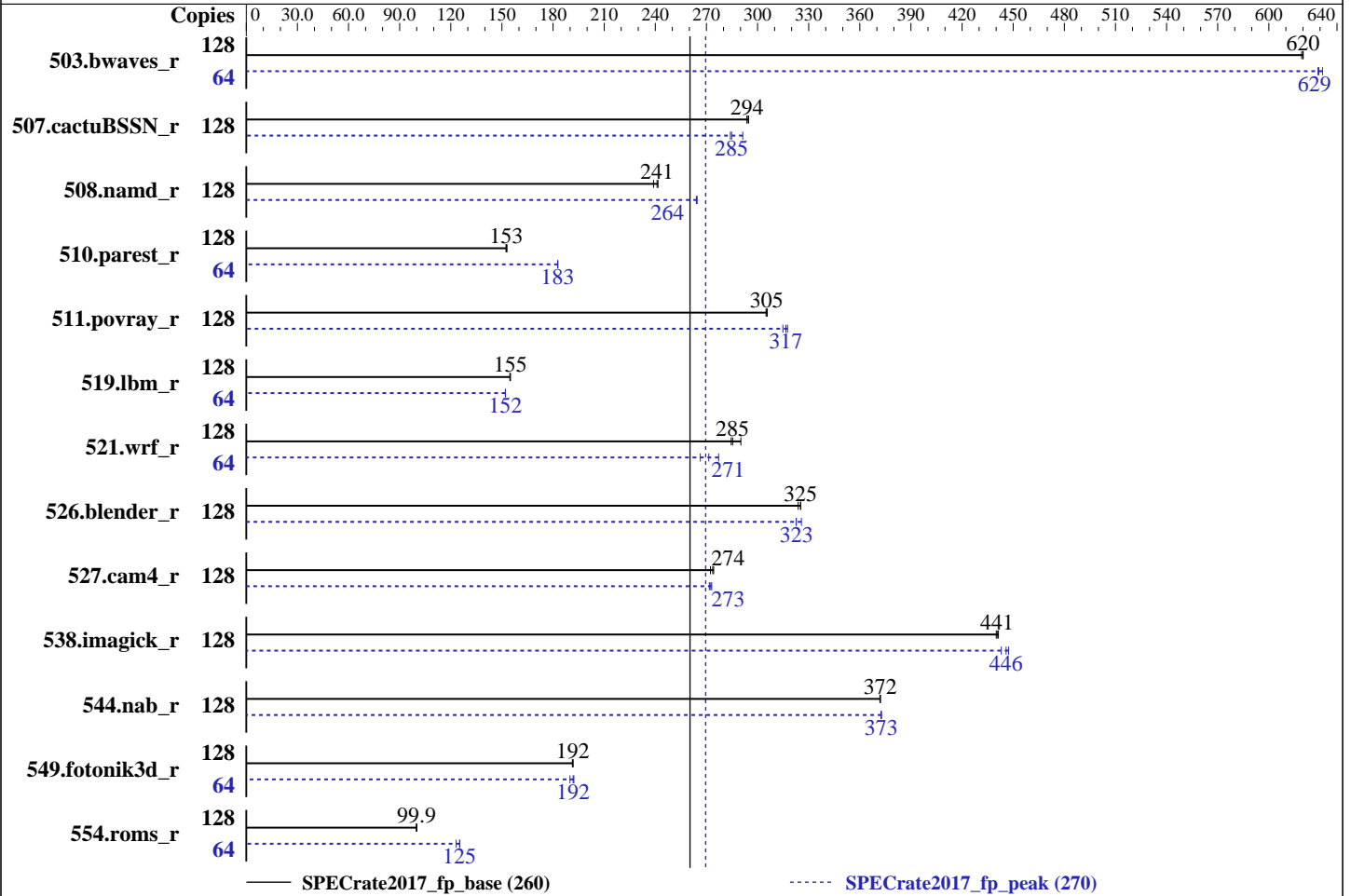
A+ Server 4023S-TRT
(H11DSi-NT, AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017



Hardware

CPU Name: AMD EPYC 7551
 Max MHz.: 3000
 Nominal: 2000
 Enabled: 64 cores, 2 chips, 2 threads/core
 Orderable: 1,2 chips
 Cache L1: 64 KB I + 32 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 64 MB I+D on chip per chip, 8 MB shared / 4 cores
 Other: None
 Memory: 1 TB (16 x 64 GB 4Rx4 PC4-2666V-L)
 Storage: 1 x 500 GB SATAIII, 7200 RPM
 Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)
 kernel 4.4.114-94.11-default
 Compiler: C/C++: Version 1.0.0 of AOCC
 Fortran: Version 4.8.2 of GCC
 Parallel: No
 Firmware: Supermicro BIOS version 1.0c released Feb-2018
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other: jemalloc: jemalloc general purpose malloc implementation V4.5.0



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT, AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	128	2073	619	<u>2070</u>	<u>620</u>	2070	620	64	1021	629	1016	631	<u>1020</u>	<u>629</u>
507.cactuBSSN_r	128	550	295	552	294	<u>551</u>	<u>294</u>	128	556	291	570	284	<u>569</u>	<u>285</u>
508.namd_r	128	509	239	503	242	<u>505</u>	<u>241</u>	128	460	264	<u>460</u>	<u>264</u>	460	265
510.parest_r	128	2198	152	2189	153	<u>2194</u>	<u>153</u>	64	916	183	<u>916</u>	<u>183</u>	916	183
511.povray_r	128	980	305	978	306	<u>979</u>	<u>305</u>	128	<u>944</u>	<u>317</u>	941	318	949	315
519.lbm_r	128	872	155	871	155	<u>871</u>	<u>155</u>	64	<u>444</u>	<u>152</u>	444	152	444	152
521.wrf_r	128	<u>1005</u>	<u>285</u>	1008	285	988	290	64	<u>528</u>	<u>271</u>	517	277	538	266
526.blender_r	128	<u>599</u>	<u>325</u>	602	324	599	325	128	<u>604</u>	<u>323</u>	604	323	598	326
527.cam4_r	128	816	274	<u>818</u>	<u>274</u>	822	272	128	820	273	824	272	<u>822</u>	<u>273</u>
538.imagick_r	128	723	440	<u>723</u>	<u>441</u>	721	441	128	712	447	719	443	<u>714</u>	<u>446</u>
544.nab_r	128	<u>579</u>	<u>372</u>	579	372	579	372	128	578	373	<u>578</u>	<u>373</u>	579	372
549.fotonik3d_r	128	<u>2604</u>	<u>192</u>	2601	192	2607	191	64	<u>1300</u>	<u>192</u>	1313	190	1297	192
554.roms_r	128	<u>2037</u>	<u>99.9</u>	2037	99.9	2033	100	64	826	123	<u>813</u>	<u>125</u>	811	125

SPECrate2017_fp_base = **260**

SPECrate2017_fp_peak = **270**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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

runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <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 were enabled for this run (OS default)

Huge pages were not configured for this run.



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT, AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/amd1704-rate-libs-revC/64;/home/cpu2017/amd1704-rate-libs-revC/32:"
MALLOCONF = "lg_chunk:28"

The AMD64 AOCC Compiler Suite is available at
<http://developer.amd.com/amd-aocc/>

The AOCC Gold Linker plugin was installed and used for the link stage.

The AOCC Fortran Plugin version 1.0 was used to leverage AOCC optimizers with gfortran. It is available here:
<http://developer.amd.com/amd-aocc/>

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using RHEL 7.4

jemalloc, a general purpose malloc implementation, was obtained at
<https://github.com/jemalloc/jemalloc/releases/download/4.5.0/jemalloc-4.5.0.tar.bz2>
jemalloc was built with GCC v4.8.5 in RHEL v7.2 under default conditions.
jemalloc uses environment variable MALLOCONF with values narenas and lg_chunk:
narenas: sets the maximum number of arenas to use for automatic multiplexing of threads and arenas.
lg_chunk: set the virtual memory chunk size (log base 2). For example,
lg_chunk:21 sets the default chunk size to 2²¹ = 2MiB.

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.

Platform Notes

BIOS Settings:
Determinism Slider = Power
cTDP Control = Manual
cTDP = 200
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-769d Sat Mar 17 07:55:29 2018

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

From /proc/cpuinfo

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Platform Notes (Continued)

```

model name : AMD EPYC 7551 32-Core Processor
  2 "physical id"s (chips)
  128 "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 : 32
  siblings  : 64
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
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

```

From lscpu:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
CPU(s):                 128
On-line CPU(s) list:   0-127
Thread(s) per core:    2
Core(s) per socket:    32
Socket(s):              2
NUMA node(s):          8
Vendor ID:              AuthenticAMD
CPU family:             23
Model:                  1
Model name:             AMD EPYC 7551 32-Core Processor
Stepping:               2
CPU MHz:                2000.000
CPU max MHz:           2000.0000
CPU min MHz:           1200.0000
BogoMIPS:               3999.82
Virtualization:        AMD-V
L1d cache:              32K
L1i cache:              64K
L2 cache:               512K
L3 cache:               8192K
NUMA node0 CPU(s):     0-7,64-71
NUMA node1 CPU(s):     8-15,72-79
NUMA node2 CPU(s):     16-23,80-87
NUMA node3 CPU(s):     24-31,88-95
NUMA node4 CPU(s):     32-39,96-103
NUMA node5 CPU(s):     40-47,104-111
NUMA node6 CPU(s):     48-55,112-119
NUMA node7 CPU(s):     56-63,120-127
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 nonstop_tsc extd_apicid amd_dcm aperfmperf eagerfpu pni

```

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Platform Notes (Continued)

```
pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx fl6c
rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
osvw skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx arat cpb
hw_pstate retpoline retpoline_amd npt lbrv svm_lock nrip_save tsc_scale vmcb_clean
flushbyasid decodeassists pausefilter pfthreshold vmmcall avic fsgsbase bmi1 avx2
smep bmi2 rdseed adx smap clflushopt sha_ni xsaveopt xsavec xgetbv1 clzero irperf
ibpb 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 2 3 4 5 6 7 64 65 66 67 68 69 70 71
node 0 size: 128851 MB
node 0 free: 128609 MB
node 1 cpus: 8 9 10 11 12 13 14 15 72 73 74 75 76 77 78 79
node 1 size: 129021 MB
node 1 free: 128828 MB
node 2 cpus: 16 17 18 19 20 21 22 23 80 81 82 83 84 85 86 87
node 2 size: 129021 MB
node 2 free: 128839 MB
node 3 cpus: 24 25 26 27 28 29 30 31 88 89 90 91 92 93 94 95
node 3 size: 129021 MB
node 3 free: 128837 MB
node 4 cpus: 32 33 34 35 36 37 38 39 96 97 98 99 100 101 102 103
node 4 size: 129021 MB
node 4 free: 128863 MB
node 5 cpus: 40 41 42 43 44 45 46 47 104 105 106 107 108 109 110 111
node 5 size: 129021 MB
node 5 free: 128860 MB
node 6 cpus: 48 49 50 51 52 53 54 55 112 113 114 115 116 117 118 119
node 6 size: 129021 MB
node 6 free: 128861 MB
node 7 cpus: 56 57 58 59 60 61 62 63 120 121 122 123 124 125 126 127
node 7 size: 129019 MB
node 7 free: 128860 MB
node distances:
node  0  1  2  3  4  5  6  7
  0:  10  16  16  16  32  32  32  32
  1:  16  10  16  16  32  32  32  32
  2:  16  16  10  16  32  32  32  32
  3:  16  16  16  10  32  32  32  32
  4:  32  32  32  32  10  16  16  16
  5:  32  32  32  32  16  10  16  16
  6:  32  32  32  32  16  16  10  16
```

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Platform Notes (Continued)

7: 32 32 32 32 16 16 16 10

From /proc/meminfo

MemTotal: 1056765912 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

SuSE-release:

SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 3

This file is deprecated and will be removed in a future service pack or release.
Please check /etc/os-release for details about this release.

os-release:

NAME="SLES"
VERSION="12-SP3"
VERSION_ID="12.3"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:

Linux linux-769d 4.4.114-94.11-default #1 SMP Thu Feb 1 19:28:26 UTC 2018 (4309ff9)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 16 20:14

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	422G	25G	397G	6%	/home

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.

BIOS American Megatrends Inc. 1.0c 02/07/2018

Memory:

16x Samsung M386A8K40BM2-CTD 64 GB 4 rank 2667

(End of data from sysinfo program)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Compiler Version Notes

=====
CC 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)

AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM
AOCC.LLVM.4.0.0.B35.2017_04_26)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====
CXXC 508.namd_r(base, peak) 510.parest_r(base, peak)

AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM
AOCC.LLVM.4.0.0.B35.2017_04_26)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====
CC 511.povray_r(base, peak) 526.blender_r(base, peak)

AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM
AOCC.LLVM.4.0.0.B35.2017_04_26)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin
AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM
AOCC.LLVM.4.0.0.B35.2017_04_26)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====
FC 507.cactuBSSN_r(base, peak)

AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM
AOCC.LLVM.4.0.0.B35.2017_04_26)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin
AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM
AOCC.LLVM.4.0.0.B35.2017_04_26)
Target: x86_64-unknown-linux-gnu
Thread model: posix

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Compiler Version Notes (Continued)

InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

GNU Fortran (GCC) 4.8.2

Copyright (C) 2013 Free Software Foundation, Inc.

GNU Fortran comes with NO WARRANTY, to the extent permitted by law.

You may redistribute copies of GNU Fortran

under the terms of the GNU General Public License.

For more information about these matters, see the file named COPYING

=====

FC 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)

GNU Fortran (GCC) 4.8.2

Copyright (C) 2013 Free Software Foundation, Inc.

GNU Fortran comes with NO WARRANTY, to the extent permitted by law.

You may redistribute copies of GNU Fortran

under the terms of the GNU General Public License.

For more information about these matters, see the file named COPYING

=====

CC 521.wrf_r(base, peak) 527.cam4_r(base, peak)

GNU Fortran (GCC) 4.8.2

Copyright (C) 2013 Free Software Foundation, Inc.

GNU Fortran comes with NO WARRANTY, to the extent permitted by law.

You may redistribute copies of GNU Fortran

under the terms of the GNU General Public License.

For more information about these matters, see the file named COPYING

AOCC.LLVM.4.0.0.B35.2017_04_26 clang version 4.0.0 (CLANG:) (based on LLVM

AOCC.LLVM.4.0.0.B35.2017_04_26)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Base Compiler Invocation (Continued)

Fortran benchmarks:
clang gfortran

Benchmarks using both Fortran and C:
clang gfortran

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

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

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 -fconvert=big-endian -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

Base Optimization Flags

C benchmarks:
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-disable-vect-cmp -O3 -ffast-math -march=znver1 -fstruct-layout=2
-mllvm -unroll-threshold=100 -fremap-arrays -mno-avx2
-inline-threshold=1000 -z muldefs -ljemalloc

C++ benchmarks:
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-disable-vect-cmp -O3 -march=znver1 -mllvm -unroll-threshold=100
-finline-aggressive -fremap-arrays -inline-threshold=1000 -z muldefs
-ljemalloc

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Base Optimization Flags (Continued)

Fortran benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-disable-vect-cmp -O3(gfortran) -O3(clang) -mavx -madox
-funroll-loops -ffast-math -z muldefs -fplugin=dragonegg.so
-fplugin-arg-dragonegg-llvm-option=" -disable-vect-cmp" -ljemalloc
-lgfortran -lamdlibm
```

Benchmarks using both Fortran and C:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-disable-vect-cmp -O3(clang) -ffast-math -march=znver1
-fstruct-layout=2 -mllvm -unroll-threshold=100 -fremap-arrays
-mno-avx2 -inline-threshold=1000 -O3(gfortran) -mavx -madox
-funroll-loops -z muldefs -fplugin=dragonegg.so
-fplugin-arg-dragonegg-llvm-option=" -disable-vect-cmp" -ljemalloc
-lgfortran -lamdlibm
```

Benchmarks using both C and C++:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-disable-vect-cmp -O3 -ffast-math -march=znver1 -fstruct-layout=2
-mllvm -unroll-threshold=100 -fremap-arrays -mno-avx2
-inline-threshold=1000 -finline-aggressive -z muldefs -ljemalloc
```

Benchmarks using Fortran, C, and C++:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-disable-vect-cmp -O3(clang) -ffast-math -march=znver1
-fstruct-layout=2 -mllvm -unroll-threshold=100 -fremap-arrays
-mno-avx2 -inline-threshold=1000 -finline-aggressive -O3(gfortran)
-mavx -madox -funroll-loops -z muldefs -fplugin=dragonegg.so
-fplugin-arg-dragonegg-llvm-option=" -disable-vect-cmp" -ljemalloc
```

Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

clang gfortran

Benchmarks using both Fortran and C:

clang gfortran

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Peak Compiler Invocation (Continued)

Benchmarks using both C and C++:

```
clang++ clang
```

Benchmarks using Fortran, C, and C++:

```
clang++ clang gfortran
```

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop -Ofast  
-march=znver1 -fstruct-layout=3 -mllvm -vectorize-memory-aggressively  
-mno-avx2 -unroll-threshold=100 -fremap-arrays -inline-threshold=1000  
-ljemalloc
```

C++ benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop -Ofast  
-march=znver1 -finline-aggressive -mllvm -unroll-threshold=100  
-fremap-arrays -inline-threshold=1000 -ljemalloc
```

Fortran benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop  
-O3(gfortran) -O3(clang) -mavx2 -madx -funroll-loops -ffast-math  
-fplugin=dragonegg.so -fplugin-arg-dragonegg-llvm-option="  
-inline-threshold:1000" -ljemalloc -lgfortran -lamdlibm
```

Benchmarks using both Fortran and C:

```
521.wrf_r: -flto -Wl, -plugin-opt= -merge-constant  
-lsr-in-nested-loop -O3(clang) -mavx -ffast-math  
-O3(gfortran) -funroll-loops -fplugin=dragonegg.so  
-fplugin-arg-dragonegg-llvm-option="  
-inline-threshold:1000" -ljemalloc -lgfortran -lamdlibm
```

```
527.cam4_r: -flto -Wl, -plugin-opt= -merge-constant  
-lsr-in-nested-loop -Ofast -march=znver1  
-fstruct-layout=3 -mllvm -vectorize-memory-aggressively  
-mno-avx2 -unroll-threshold=100 -fremap-arrays  
-inline-threshold=1000 -O3(gfortran) -O3(clang) -mavx2
```

(Continued on next page)



SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 4023S-TRT
(H11DSi-NT , AMD EPYC 7551)

SPECrate2017_fp_base = 260

SPECrate2017_fp_peak = 270

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2018
Hardware Availability: Jun-2017
Software Availability: Nov-2017

Peak Optimization Flags (Continued)

527.cam4_r (continued):

```
-madx -funroll-loops -ffast-math -fplugin=dragonegg.so  
-fplugin-arg-dragonegg-llvm-option="  
-inline-threshold:1000" -ljemalloc -lgfortran -lamdlibm
```

Benchmarks using both C and C++:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop -Ofast  
-march=znver1 -fstruct-layout=3 -mllvm -vectorize-memory-aggressively  
-mno-avx2 -unroll-threshold=100 -fremap-arrays -inline-threshold=1000  
-finline-aggressive -ljemalloc
```

Benchmarks using Fortran, C, and C++:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop -Ofast  
-march=znver1 -fstruct-layout=3 -mllvm -vectorize-memory-aggressively  
-mno-avx2 -unroll-threshold=100 -fremap-arrays -inline-threshold=1000  
-finline-aggressive -O3 -mavx2 -madx -funroll-loops -ffast-math  
-fplugin=dragonegg.so -fplugin-arg-dragonegg-llvm-option="  
-inline-threshold:1000" -ljemalloc
```

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

<http://www.spec.org/cpu2017/flags/gcc.2018-02-16.html>
<http://www.spec.org/cpu2017/flags/aocc100-flags-revC-I.2018-02-16.html>
<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Naples-revC.2018-03-20.html>

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

<http://www.spec.org/cpu2017/flags/gcc.2018-02-16.xml>
<http://www.spec.org/cpu2017/flags/aocc100-flags-revC-I.2018-02-16.xml>
<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Naples-revC.2018-03-20.xml>

SPEC is a registered trademark 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 CPU2017 v1.0.2 on 2018-03-16 19:55:28-0400.
Report generated on 2019-02-21 14:26:50 by CPU2017 PDF formatter v6067.
Originally published on 2018-04-03.