



# SPEC® CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

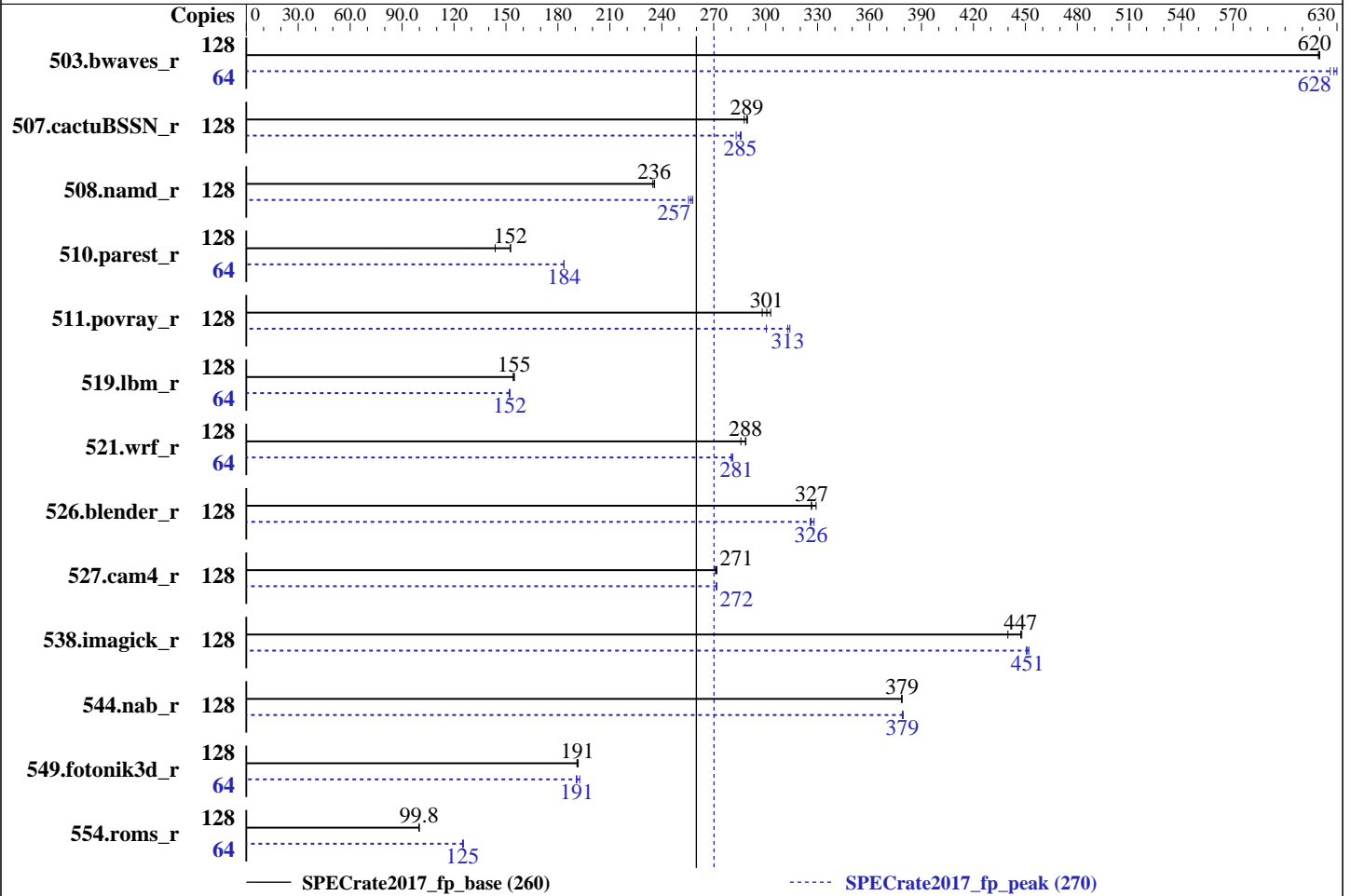
A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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 7501  
 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 200 GB SATAIII SSD  
 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 1.0b 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 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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	<u>2071</u>	<u>620</u>	2073	619	2070	620	64	<u>1022</u>	<u>628</u>	1025	626	1019	630
507.cactuBSSN_r	128	560	289	<u>561</u>	<u>289</u>	563	288	128	567	286	<u>568</u>	<u>285</u>	573	283
508.namd_r	128	<u>516</u>	<u>236</u>	518	235	516	236	128	<u>473</u>	<u>257</u>	476	255	471	258
510.parest_r	128	2329	144	<u>2196</u>	<u>152</u>	2193	153	64	913	183	912	184	<u>912</u>	<u>184</u>
511.povray_r	128	<u>994</u>	<u>301</u>	987	303	1003	298	128	952	314	<u>956</u>	<u>313</u>	995	300
519.lbm_r	128	872	155	<u>872</u>	<u>155</u>	875	154	64	444	152	<u>443</u>	<u>152</u>	443	152
521.wrf_r	128	<u>994</u>	<u>288</u>	994	289	1004	286	64	510	281	<u>511</u>	<u>281</u>	512	280
526.blender_r	128	597	326	<u>597</u>	<u>327</u>	592	329	128	594	328	599	326	<u>597</u>	<u>326</u>
527.cam4_r	128	<u>825</u>	<u>271</u>	824	272	826	271	128	<u>824</u>	<u>272</u>	824	272	825	271
538.imagick_r	128	<u>712</u>	<u>447</u>	711	448	724	440	128	<u>706</u>	<u>451</u>	704	452	707	451
544.nab_r	128	569	379	<u>569</u>	<u>379</u>	569	379	128	<u>568</u>	<u>379</u>	568	379	568	379
549.fotonik3d_r	128	<u>2608</u>	<u>191</u>	2602	192	2611	191	64	1295	193	1309	191	<u>1306</u>	<u>191</u>
554.roms_r	128	<u>2038</u>	<u>99.8</u>	2037	99.9	2039	99.8	64	814	125	<u>814</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 2123BT-HNC0R  
(H11DST-B, AMD EPYC 7501)

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  
<http://developer.amd.com/amd-aocc/>  
with gfortran. It is available here:

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  $2^{21} = 2\text{MiB}$ .

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

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f

running on linux-pm02 Wed Mar 14 22:26:25 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

model name : AMD EPYC 7501 32-Core Processor

2 "physical id"s (chips)

128 "processors"

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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)

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 7501 32-Core Processor
Stepping:              2
CPU MHz:               2000.000
CPU max MHz:           2000.0000
CPU min MHz:           1200.0000
BogoMIPS:              3999.75
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
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 skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx arat cpb
```

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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)

```
hw_pstate retpoline retpoline_amd npt lbrv svm_lock nrip_save tsc_scale vmcb_clean
flushbyasid decodeassists pausefilter pfthreshold vmmcall avic fsgsbase bml 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: 128850 MB
node 0 free: 128605 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: 128825 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: 128794 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: 128748 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: 128841 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: 128856 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: 128855 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: 128853 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
 7:  32 32 32 32 16 16 16 10
```

From /proc/meminfo

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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)

MemTotal: 1056765484 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-pm02 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 14 10:49

SPEC is set to: /home/cpu2017

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda4       xfs   145G  2.8G  142G   2% /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. 1.0b 02/07/2018

Memory:

16x Samsung M386A8K40BM2-CTD 64 GB 4 rank 2667

(End of data from sysinfo program)

### 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

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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)

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  
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.

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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)

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++

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 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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)

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

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

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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 (continued):

```
-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

Benchmarks using both C and C++:

clang++ clang

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B , AMD EPYC 7501)

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

(Continued on next page)



# SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

A+ Server 2123BT-HNC0R  
(H11DST-B, AMD EPYC 7501)

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)

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/aoccl100-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/aoccl100-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](mailto:info@spec.org).

Tested with SPEC CPU2017 v1.0.2 on 2018-03-14 10:26:24-0400.

Report generated on 2019-02-21 14:26:54 by CPU2017 PDF formatter v6067.

Originally published on 2018-04-03.