SPEC® CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro
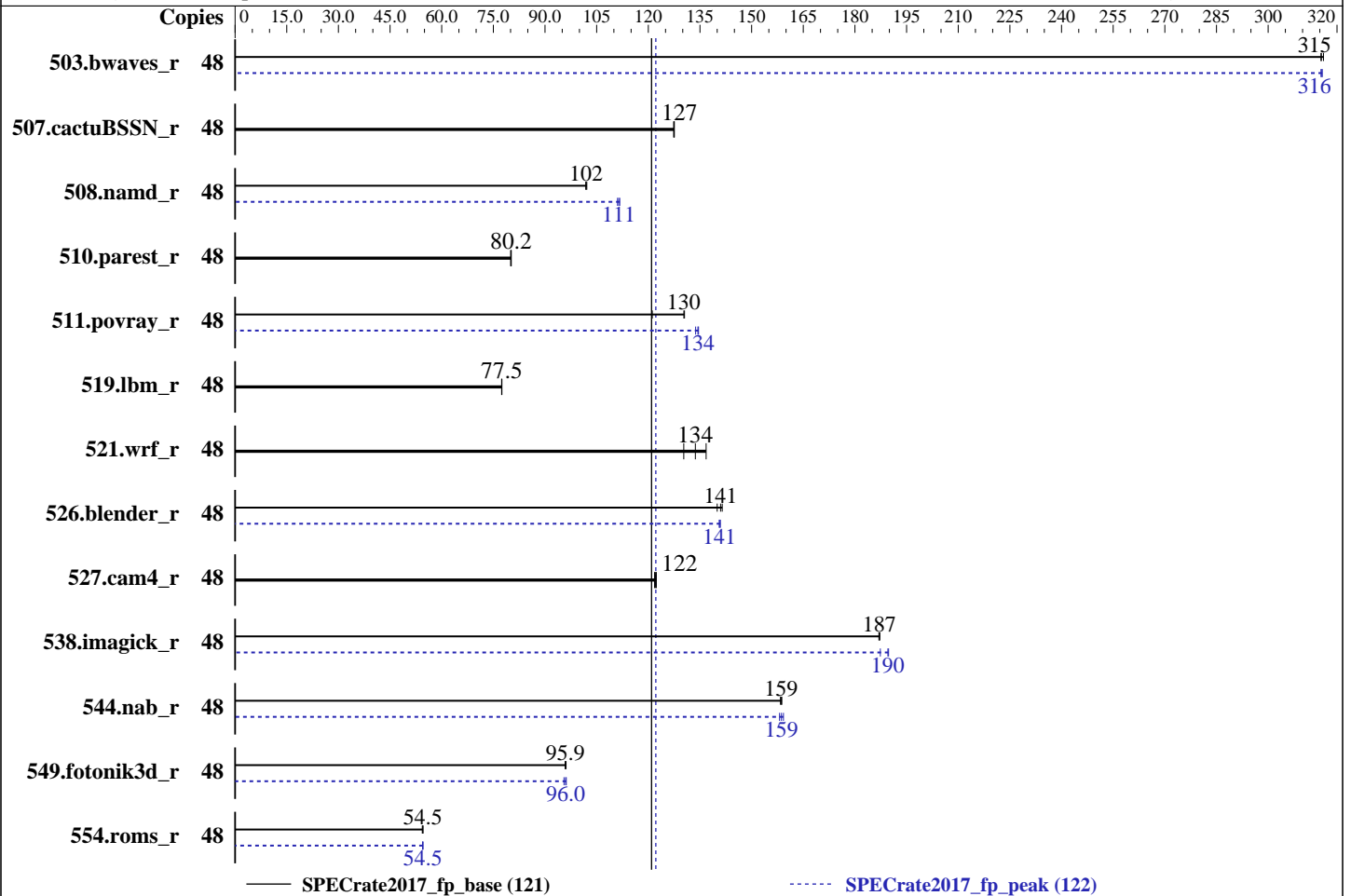
A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

$SPECrate2017\_fp\_base = 121$

$SPECrate2017\_fp\_peak = 122$

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

Copies		
503.bwaves_r	48	315 / 316
507.cactuBSSN_r	48	127
508.namd_r	48	102 / 111
510.parest_r	48	80.2
511.povray_r	48	130 / 134
519.lbm_r	48	77.5
521.wrf_r	48	134
526.blender_r	48	141 / 141
527.cam4_r	48	122
538.imagick_r	48	187 / 190
544.nab_r	48	159 / 159
549.fotonik3d_r	48	95.9 / 96.0
554.roms_r	48	54.5 / 54.5

SPECrate2017_fp_base (121)   SPECrate2017_fp_peak (122)

Hardware

CPU Name: AMD EPYC 7451
  Max MHz.: 3200
  Nominal: 2300
Enabled: 24 cores, 1 chip, 2 threads/core
Orderable: 1 chip
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 / 3 cores
  Other: None
Memory: 512 GB (8 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 Apr-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc general purpose malloc implementation
       V4.5.0

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

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

Test Date: Jul-2018
Hardware Availability: Jun-2017
Software Availability: Feb-2018

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	48	1526	315	**1526**	**315**	1523	316	48	1525	316	1526	315	**1525**	**316**
507.cactuBSSN_r	48	476	128	**477**	**127**	477	127	48	476	128	**477**	**127**	477	127
508.namd_r	48	**447**	**102**	448	102	446	102	48	411	111	408	112	**409**	**111**
510.parest_r	48	1566	80.2	1569	80.0	**1566**	**80.2**	48	1566	80.2	1569	80.0	**1566**	**80.2**
511.povray_r	48	**860**	**130**	925	121	859	131	48	833	135	838	134	**834**	**134**
519.lbm_r	48	653	77.5	**653**	**77.5**	654	77.4	48	653	77.5	**653**	**77.5**	654	77.4
521.wrf_r	48	825	130	786	137	**804**	**134**	48	825	130	786	137	**804**	**134**
526.blender_r	48	522	140	**519**	**141**	517	141	48	519	141	520	141	**520**	**141**
527.cam4_r	48	**688**	**122**	686	122	689	122	48	**688**	**122**	686	122	689	122
538.imagick_r	48	**638**	**187**	638	187	638	187	48	637	187	**630**	**190**	629	190
544.nab_r	48	510	158	509	159	**509**	**159**	48	507	159	**509**	**159**	511	158
549.fotonik3d_r	48	1946	96.1	**1950**	**95.9**	1951	95.9	48	1945	96.2	1959	95.5	**1949**	**96.0**
554.roms_r	48	1403	54.4	1398	54.6	**1399**	**54.5**	48	**1398**	**54.5**	1398	54.5	1401	54.4
SPECrate2017_fp_base =	**121**												
SPECrate2017_fp_peak =	**122**												

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 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

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

Test Date: Jul-2018
Hardware Availability: Jun-2017
Software Availability: Feb-2018

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:"
MALLOC_CONF = "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 MALLOC_CONF 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 = 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-pm02 Mon Jul 23 09:24:27 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 7451 24-Core Processor
```

(Continued on next page)

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base = 121

SPECrate2017_fp_peak = 122

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Jul-2018

Hardware Availability: Jun-2017

Software Availability: Feb-2018

Platform Notes (Continued)

```
     1  "physical id"s (chips)
     48 "processors"
   cores, siblings (Caution: counting these is hw and system dependent. The following
   excerpts from /proc/cpuinfo might not be reliable.  Use with caution.)
     cpu cores : 24
     siblings  : 48
     physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30

  From lscpu:
     Architecture:          x86_64
     CPU op-mode(s):        32-bit, 64-bit
     Byte Order:            Little Endian
     CPU(s):                48
     On-line CPU(s) list:   0-47
     Thread(s) per core:    2
     Core(s) per socket:    24
     Socket(s):             1
     NUMA node(s):          4
     Vendor ID:             AuthenticAMD
     CPU family:            23
     Model:                 1
     Model name:            AMD EPYC 7451 24-Core Processor
     Stepping:              2
     CPU MHz:               2300.000
     CPU max MHz:           2300.0000
     CPU min MHz:           1200.0000
     BogoMIPS:              4599.74
     Virtualization:        AMD-V
     L1d cache:             32K
     L1i cache:             64K
     L2 cache:              512K
     L3 cache:              8192K
     NUMA node0 CPU(s):     0-5,24-29
     NUMA node1 CPU(s):     6-11,30-35
     NUMA node2 CPU(s):     12-17,36-41
     NUMA node3 CPU(s):     18-23,42-47
     Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
     pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
     constant_tsc rep_good nopl 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
     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
```

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

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

Test Date: Jul-2018
Hardware Availability: Jun-2017
Software Availability: Feb-2018

Platform Notes (Continued)

```
/proc/cpuinfo cache data
   cache size : 512 KB

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 4 nodes (0-3)
  node 0 cpus: 0 1 2 3 4 5 24 25 26 27 28 29
  node 0 size: 128841 MB
  node 0 free: 128667 MB
  node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
  node 1 size: 129019 MB
  node 1 free: 128872 MB
  node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
  node 2 size: 129019 MB
  node 2 free: 128849 MB
  node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
  node 3 size: 129017 MB
  node 3 free: 128860 MB
  node distances:
  node   0   1   2   3
    0:  10  16  16  16
    1:  16  10  16  16
    2:  16  16  10  16
    3:  16  16  16  10

From /proc/meminfo
   MemTotal:       528278488 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:
```

(Continued on next page)

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base = 121

SPECrate2017_fp_peak = 122

CPU2017 License: 001176   **Test Date:** Jul-2018
Test Sponsor: Supermicro   **Hardware Availability:** Jun-2017
Tested by: Supermicro   **Software Availability:** Feb-2018

Platform Notes (Continued)

```
    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 Jul 23 09:13

  SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda4       xfs   145G  3.0G  142G   3% /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 04/27/2018
   Memory:
    8x 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
  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)
```

(Continued on next page)

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base = 121

SPECrate2017_fp_peak = 122

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

Test Date: Jul-2018
Hardware Availability: Jun-2017
Software Availability: Feb-2018

Compiler Version Notes (Continued)

```
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.
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
```

(Continued on next page)

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

CPU2017 License: 001176		**Test Date:**	Jul-2018
Test Sponsor:	Supermicro	**Hardware Availability:**	Jun-2017
Tested by:	Supermicro	**Software Availability:**	Feb-2018

Compiler Version Notes (Continued)

```
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

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

(Continued on next page)

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Jul-2018

Hardware Availability: Jun-2017

Software Availability: Feb-2018

Base Portability Flags (Continued)

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 -madx
-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 -madx
-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
```

(Continued on next page)

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base = 121

SPECrate2017_fp_peak = 122

CPU2017 License: 001176   **Test Date:** Jul-2018
Test Sponsor: Supermicro   **Hardware Availability:** Jun-2017
Tested by: Supermicro   **Software Availability:** Feb-2018

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
```
-fstruct-layout=2 -mllvm -unroll-threshold=100 -fremap-arrays
-mno-avx2 -inline-threshold=1000 -finline-aggressive -O3(gfortran)
-mavx -madx -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
```

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

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

519.lbm_r: `basepeak = yes`

538.imagick_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
```

(Continued on next page)

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

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

Test Date: Jul-2018
Hardware Availability: Jun-2017
Software Availability: Feb-2018

Peak Optimization Flags (Continued)

538.imagick_r (continued):
`-inline-threshold=1000 -ljemalloc`

544.nab_r: `Same as 538.imagick_r`

C++ benchmarks:

508.namd_r: `-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`

510.parest_r: `basepeak = yes`

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: `basepeak = yes`

527.cam4_r: `basepeak = yes`

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++:

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/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-revD.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-revD.xml

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

SPEC CPU2017 Floating Point Rate Result

Supermicro

A+ Server 1013S-MTR
(H11SSL-i , AMD EPYC 7451)

SPECrate2017_fp_base =   121

SPECrate2017_fp_peak =   122

CPU2017 License: 001176		**Test Date:**	Jul-2018
Test Sponsor:	Supermicro	**Hardware Availability:**	Jun-2017
Tested by:	Supermicro	**Software Availability:**	Feb-2018

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 2018-07-22 21:24:26-0400.
Report generated on 2019-02-21 17:43:44 by CPU2017 PDF formatter v6067.
Originally published on 2018-08-07.