SPEC® CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

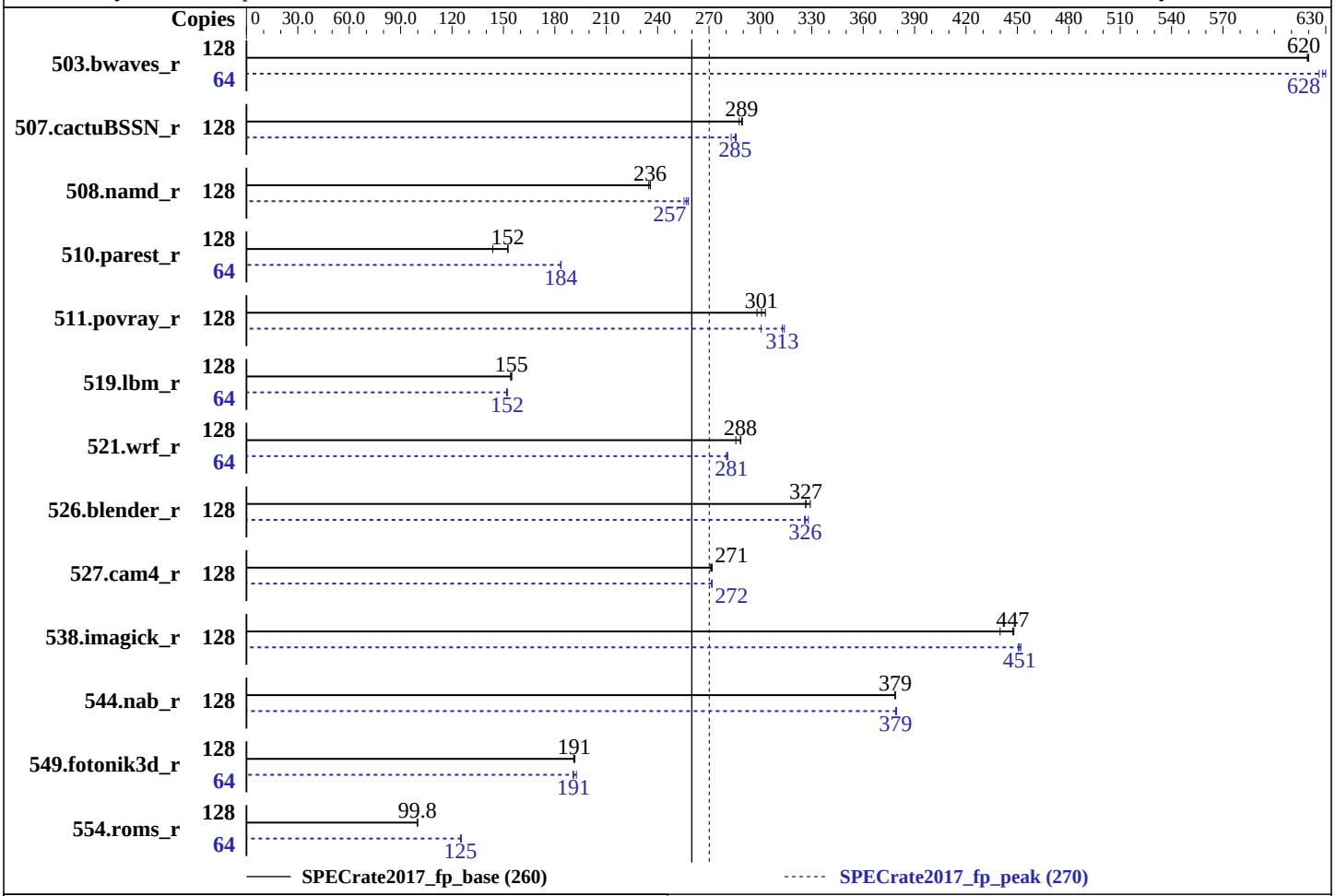
A+ Server 2123BT-HNC0R
(H11DST-B , AMD EPYC 7501)

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

Results Table

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

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
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 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
 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)

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)

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 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: 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)

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)

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)

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)

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 -madx
-funroll-loops -ffast-math -z muldefs -fplugin=dragonegg.so

(Continued on next page)

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 -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
-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

(Continued on next page)

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

(Continued on next page)

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/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 2018-03-14 10:26:24-0400.
Report generated on 2019-02-21 14:26:55 by CPU2017 PS formatter v6067.
Originally published on 2018-04-03.