



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

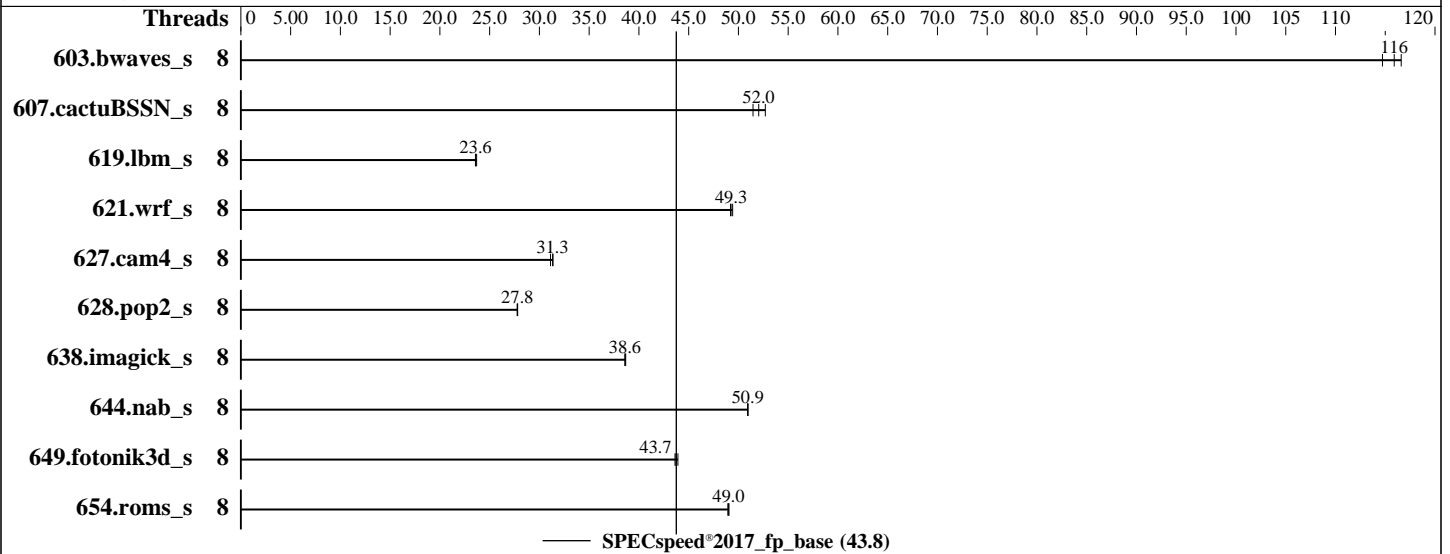
Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019



Hardware

CPU Name: AMD EPYC 7262
 Max MHz: 3400
 Nominal: 3200
 Enabled: 8 cores, 1 chip
 Orderable: 1 chip
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 128 MB I+D on chip per chip,
 16 MB per core
 Other: None
 Memory: 256 GB (8 x 32 GB 2Rx4 PC4-2933Y-R)
 Storage: 1 x 500 GB SATA SSD, RAID 0
 Other: None

Software

OS: SUSE Linux Enterprise Server 15 (x86_64) SP1
 Kernel 4.12.14-195-default
 Compiler: C/C++: Version 1.3.0 of AOCC
 Fortran: Version 4.8.2 of GCC
 Parallel: Yes
 Firmware: HPE BIOS Version A41 07/20/2019 released Aug-2019
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: jemalloc: jemalloc memory allocator library v5.1.0;
 Power Management: --



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Results Table

Benchmark	Base						Peak							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	8	506	117	509	116	514	115							
607.cactuBSSN_s	8	316	52.7	320	52.0	324	51.5							
619.lbm_s	8	221	23.7	222	23.6	222	23.6							
621.wrf_s	8	268	49.4	268	49.3	269	49.2							
627.cam4_s	8	283	31.3	283	31.4	285	31.1							
628.pop2_s	8	427	27.8	428	27.8	427	27.8							
638.imagick_s	8	373	38.7	374	38.6	374	38.6							
644.nab_s	8	343	51.0	343	50.9	343	50.9							
649.fotonik3d_s	8	209	43.6	208	43.7	208	43.9							
654.roms_s	8	321	49.0	321	49.0	322	48.9							

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

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

Compiler Notes

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

The AOCC Fortran Plugin version 1.3.0 was used to leverage AOCC optimizers with gfortran. It is available here: <http://developer.amd.com/amd-aocc/>

Submit Notes

The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

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

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Operating System Notes (Continued)

dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

Transparent huge pages set to 'always' for this run (OS default)

General Notes

Environment variables set by runcpu before the start of the run:

```
LD_LIBRARY_PATH = "/home/cpu2017/amd_speed_aoccl30_naples_A_lib/64;
/home/cpu2017/amd_speed_aoccl30_rome_A_lib/32:"
OMP_DYNAMIC = "false"
OMP_PLACES = "cores"
OMP_PROC_BIND = "close"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "192M"
OMP_WAIT_POLICY = "active"
```

Binaries were compiled on a system with 2p AMD EPYC 7601 CPU + 512GB Memory using RHEL 7.6

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
jemalloc 5.1.0 is available here:

<https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2>

Platform Notes

BIOS Configuration

Thermal Configuration set to Maximum Cooling

SMT Mode set to Disabled

Determinism Control set to Manual

Performance Determinism set to Power Deterministic

Minimum Processor Idle Power core C-State set to C6 State

Memory Patrol Scrubbing set to Disabled

Workload Profile set to General Peak Frequency Compute

NUMA memory domains per socket set to Four memory domains per socket

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

running on linux-stzp Wed Aug 21 07:55:14 2019

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Platform Notes (Continued)

SUT (System Under Test) info as seen by some common utilities.

For more information on this section, see

<https://www.spec.org/cpu2017/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : AMD EPYC 7262 8-Core Processor

1 "physical id"s (chips)

8 "processors"

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

cpu cores : 8

siblings : 8

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

From lscpu:

Architecture: x86_64

CPU op-mode(s): 32-bit, 64-bit

Byte Order: Little Endian

Address sizes: 48 bits physical, 48 bits virtual

CPU(s): 8

On-line CPU(s) list: 0-7

Thread(s) per core: 1

Core(s) per socket: 8

Socket(s): 1

NUMA node(s): 4

Vendor ID: AuthenticAMD

CPU family: 23

Model: 49

Model name: AMD EPYC 7262 8-Core Processor

Stepping: 0

CPU MHz: 3200.000

CPU max MHz: 3200.0000

CPU min MHz: 1500.0000

BogoMIPS: 6388.00

Virtualization: AMD-V

L1d cache: 32K

L1i cache: 32K

L2 cache: 512K

L3 cache: 16384K

NUMA node0 CPU(s): 0,1

NUMA node1 CPU(s): 2,3

NUMA node2 CPU(s): 4,5

NUMA node3 CPU(s): 6,7

Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov

pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm

constant_tsc rep_good nopl xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

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 ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx cpb
cat_l3 cdp_l3 hw_pstate ssbd ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2
cqm rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves
cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr arat npt
lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
pfthreshold avic v_vmsave_vmload vgif umip rdpid overflow_recov succor smca
```

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

```
From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
```

```
available: 4 nodes (0-3)
node 0 cpus: 0 1
node 0 size: 64292 MB
node 0 free: 64109 MB
node 1 cpus: 2 3
node 1 size: 64481 MB
node 1 free: 64393 MB
node 2 cpus: 4 5
node 2 size: 64510 MB
node 2 free: 64413 MB
node 3 cpus: 6 7
node 3 size: 64498 MB
node 3 free: 64294 MB
node distances:
node  0  1  2  3
  0:  10  12  12  12
  1:  12  10  12  12
  2:  12  12  10  12
  3:  12  12  12  10
```

```
From /proc/meminfo
MemTotal:      263970148 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Platform Notes (Continued)

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:

```
Linux linux-stzp 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Not affected

CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization

CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling

run-level 3 Aug 21 04:36

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sdc2	btrfs	445G	41G	404G	10%	/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 HPE A41 07/20/2019

Memory:

8x UNKNOWN NOT AVAILABLE

8x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

=====
C | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
=====

AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /root/work/compilers/aoccl.3.0/AOCC-1.3.0-Compiler/bin
=====

=====
C++, C, Fortran | 607.cactuBSSN_s(base)
=====

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Compiler Version Notes (Continued)

AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
 AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
 Target: x86_64-unknown-linux-gnu
 Thread model: posix
 InstalledDir: /root/work/compilers/aoccl.3.0/AOCC-1.3.0-Compiler/bin
 AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
 AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
 Target: x86_64-unknown-linux-gnu
 Thread model: posix
 InstalledDir: /root/work/compilers/aoccl.3.0/AOCC-1.3.0-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

 Fortran | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)

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

 Fortran, C | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)

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.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
 AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
 Target: x86_64-unknown-linux-gnu
 Thread model: posix
 InstalledDir: /root/work/compilers/aoccl.3.0/AOCC-1.3.0-Compiler/bin



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Base Compiler Invocation

C benchmarks:

clang

Fortran benchmarks:

clang gfortran

Benchmarks using both Fortran and C:

clang gfortran

Benchmarks using Fortran, C, and C++:

clang++ clang gfortran

Base Portability Flags

603.bwaves_s: -DSPEC_LP64

607.cactuBSSN_s: -DSPEC_LP64

619.lbm_s: -DSPEC_LP64

621.wrf_s: -DSPEC_CASE_FLAG -fconvert=big-endian -DSPEC_LP64

627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64

628.pop2_s: -DSPEC_CASE_FLAG -fconvert=big-endian -DSPEC_LP64

638.imagick_s: -DSPEC_LP64

644.nab_s: -DSPEC_LP64

649.fotonik3d_s: -DSPEC_LP64

654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

-flto -Wl,-plugin-opt=-merge-constant

-Wl,-plugin-opt=-lsr-in-nested-loop

-Wl,-plugin-opt=-enable-vectorize-compares=false -O3 -ffast-math

-march=znver1 -mno-avx2 -fstruct-layout=3 -mllvm -unroll-threshold=50

-fremap-arrays -mllvm -inline-threshold=1000

-flv-function-specialization -mllvm -enable-gvn-hoist

-mllvm -function-specialize -z muldefs -DSPEC_OPENMP -fopenmp

-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -ljemalloc

-lamdlibm

Fortran benchmarks:

-flto -Wl,-plugin-opt=-merge-constant

-Wl,-plugin-opt=-lsr-in-nested-loop

-Wl,-plugin-opt=-enable-vectorize-compares=false -O3 -mavx -madx

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Base Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-funroll-loops -ffast-math -z muldefs -fplugin=dragonegg.so
-fplugin-arg-dragonegg-llvm-option=-merge-constant
-fplugin-arg-dragonegg-llvm-option=-enable-vectorize-compares:false
-DSPEC_OPENMP -DUSE_OPENMP -fopenmp -fopenmp=libomp -lomp -lpthread
-ldl -ljemalloc -lamdlibm -lgfortran
```

Benchmarks using both Fortran and C:

```
-flto -Wl,-plugin-opt=-merge-constant
-Wl,-plugin-opt=-lsr-in-nested-loop
-Wl,-plugin-opt=-enable-vectorize-compares=false -O3 -ffast-math
-march=znver1 -mno-avx2 -fstruct-layout=3 -mllvm -unroll-threshold=50
-freemap-arrays -mllvm -inline-threshold=1000
-flv-function-specialization -mllvm -enable-gvn-hoist
-mllvm -function-specialize -mavx -madox -funroll-loops -z muldefs
-fplugin=dragonegg.so -fplugin-arg-dragonegg-llvm-option=-merge-constant
-fplugin-arg-dragonegg-llvm-option=-enable-vectorize-compares:false
-DSPEC_OPENMP -DUSE_OPENMP -fopenmp -fopenmp=libomp -lomp -lpthread
-ldl -ljemalloc -lamdlibm -lgfortran
```

Benchmarks using Fortran, C, and C++:

```
-std=c++98 -flto -Wl,-plugin-opt=-merge-constant
-Wl,-plugin-opt=-lsr-in-nested-loop
-Wl,-plugin-opt=-enable-vectorize-compares=false -O3 -ffast-math
-march=znver1 -mno-avx2 -fstruct-layout=3 -mllvm -unroll-threshold=50
-freemap-arrays -mllvm -inline-threshold=1000
-flv-function-specialization -mllvm -enable-gvn-hoist
-mllvm -function-specialize -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -enable-vectorize-compares=false -mavx
-madox -funroll-loops -z muldefs -fplugin=dragonegg.so
-fplugin-arg-dragonegg-llvm-option=-merge-constant
-fplugin-arg-dragonegg-llvm-option=-enable-vectorize-compares:false
-DSPEC_OPENMP -fopenmp -DUSE_OPENMP -fopenmp=libomp -lomp -lpthread
-ldl -ljemalloc -lamdlibm
```

Base Other Flags

C benchmarks:

```
-Wno-return-type
```

Fortran benchmarks:

```
-Wno-return-type
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10

(3.20 GHz, AMD EPYC 7262)

SPECspeed®2017_fp_base = 43.8

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Aug-2019

Hardware Availability: Aug-2019

Software Availability: Jun-2019

Base Other Flags (Continued)

Benchmarks using both Fortran and C:

-Wno-return-type

Benchmarks using Fortran, C, and C++:

-Wno-return-type

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

<http://www.spec.org/cpu2017/flags/aocc130-flags-revA2-HPE.html>

<http://www.spec.org/cpu2017/flags/gcc.2017-11-20.html>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revE.html>

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

<http://www.spec.org/cpu2017/flags/aocc130-flags-revA2-HPE.xml>

<http://www.spec.org/cpu2017/flags/gcc.2017-11-20.xml>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revE.xml>

SPEC CPU and SPECspeed are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.0.5 on 2019-08-21 07:55:13-0400.

Report generated on 2019-10-02 12:03:52 by CPU2017 PDF formatter v6255.

Originally published on 2019-10-01.