



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

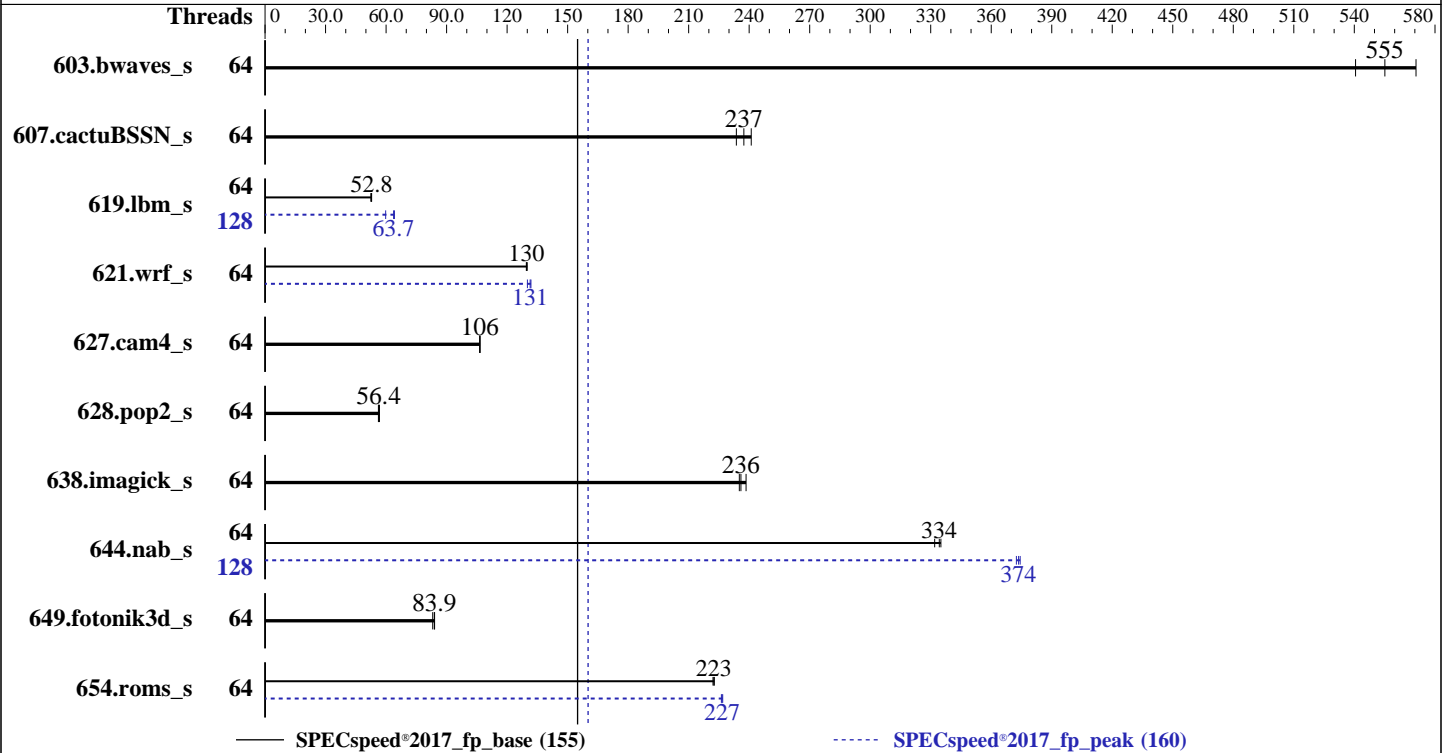
Test Date: Sep-2019

Test Sponsor: Dell Inc.

Hardware Availability: Oct-2019

Tested by: Dell Inc.

Software Availability: Aug-2019



Hardware

CPU Name: AMD EPYC 7452
 Max MHz: 3350
 Nominal: 2350
 Enabled: 64 cores, 2 chips, 2 threads/core
 Orderable: 1,2 chips
 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 shared / 4 cores
 Other: None
 Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 3200)
 Storage: 1 x 480 GB SATA SSD
 Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP1
 kernel 4.12.14-197.7-default
 Compiler: C/C++/Fortran: Version 2.0.0 of AOCC
 Parallel: Yes
 Firmware: Version 0.4.4 released Aug-2019
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 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

Dell Inc.

SPECSpeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECSpeed®2017_fp_peak = 160

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Sep-2019
Hardware Availability: Oct-2019
Software Availability: Aug-2019

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	64	103	571	106	555	109	541	64	103	571	106	555	109	541
607.cactuBSSN_s	64	71.3	234	69.2	241	70.2	237	64	71.3	234	69.2	241	70.2	237
619.lbm_s	64	99.3	52.8	99.9	52.4	99.1	52.8	128	81.7	64.1	82.2	63.7	87.6	59.8
621.wrf_s	64	102	130	102	130	102	130	64	102	130	101	131	100	132
627.cam4_s	64	83.2	107	83.2	106	83.3	106	64	83.2	107	83.2	106	83.3	106
628.pop2_s	64	211	56.4	209	56.7	211	56.2	64	211	56.4	209	56.7	211	56.2
638.imagick_s	64	61.1	236	61.4	235	60.5	238	64	61.1	236	61.4	235	60.5	238
644.nab_s	64	52.1	335	52.3	334	52.6	332	128	46.8	374	46.9	372	46.7	374
649.fotonik3d_s	64	109	83.9	108	84.0	110	83.1	64	109	83.9	108	84.0	110	83.1
654.roms_s	64	70.8	223	70.7	223	70.9	222	64	69.5	227	69.6	226	69.4	227

SPECSpeed®2017_fp_base = 155

SPECSpeed®2017_fp_peak = 160

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/>

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

```
runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <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 set to 'always' for this run (OS default)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

General Notes

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

GOMP_CPU_AFFINITY = "0-127"

LD_LIBRARY_PATH = "/root/cpu2017-1.0.5/amd_speed_aocc200_rome_B_lib/64;

/root/cpu2017-1.0.5/amd_speed_aocc200_rome_B_lib/32:"

MALLOC_CONF = "retain:true"

OMP_DYNAMIC = "false"

OMP_SCHEDULE = "static"

OMP_STACKSIZE = "128M"

OMP_THREAD_LIMIT = "128"

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using Fedora 26

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 settings:

NUMA Nodes Per Socket set to 4

CCX as NUMA Domain set to Enabled

System Profile set to Custom

CPU Power Management set to Maximum Performance

Memory Frequency set to Maximum Performance

Turbo Boost Enabled

Cstates set to Enabled

Memory Patrol Scrub Disabled

Memory Refresh Rate set to 1x

PCI ASPM L1 Link Power Management Disabled

Determinism Slider set to Power Determinism

Efficiency Optimized Mode Disabled

Sysinfo program /home/cpu2017-1.0.5/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

running on suse15-spl Mon Aug 26 22:59:02 2019

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>

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Platform Notes (Continued)

From /proc/cpuinfo

model name : AMD EPYC 7452 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

Address sizes: 43 bits physical, 48 bits virtual

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): 16

Vendor ID: AuthenticAMD

CPU family: 23

Model: 49

Model name: AMD EPYC 7452 32-Core Processor

Stepping: 0

CPU MHz: 2345.792

BogoMIPS: 4691.58

Virtualization: AMD-V

L1d cache: 32K

L1i cache: 32K

L2 cache: 512K

L3 cache: 16384K

NUMA node0 CPU(s): 0-3,64-67

NUMA node1 CPU(s): 4-7,68-71

NUMA node2 CPU(s): 8-11,72-75

NUMA node3 CPU(s): 12-15,76-79

NUMA node4 CPU(s): 16-19,80-83

NUMA node5 CPU(s): 20-23,84-87

NUMA node6 CPU(s): 24-27,88-91

NUMA node7 CPU(s): 28-31,92-95

NUMA node8 CPU(s): 32-35,96-99

NUMA node9 CPU(s): 36-39,100-103

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Platform Notes (Continued)

```

NUMA node10 CPU(s): 40-43,104-107
NUMA node11 CPU(s): 44-47,108-111
NUMA node12 CPU(s): 48-51,112-115
NUMA node13 CPU(s): 52-55,116-119
NUMA node14 CPU(s): 56-59,120-123
NUMA node15 CPU(s): 60-63,124-127

```

```

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 cpuid extd_apicid aperfmperf 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 ibs
skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx cpb cat_l3
cdp_l3 hw_pstate sme ssbd sev 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_omsave_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: 16 nodes (0-15)
node 0 cpus: 0 1 2 3 64 65 66 67
node 0 size: 31819 MB
node 0 free: 31763 MB
node 1 cpus: 4 5 6 7 68 69 70 71
node 1 size: 32253 MB
node 1 free: 32201 MB
node 2 cpus: 8 9 10 11 72 73 74 75
node 2 size: 32254 MB
node 2 free: 32202 MB
node 3 cpus: 12 13 14 15 76 77 78 79
node 3 size: 32253 MB
node 3 free: 32150 MB
node 4 cpus: 16 17 18 19 80 81 82 83
node 4 size: 32254 MB
node 4 free: 32216 MB
node 5 cpus: 20 21 22 23 84 85 86 87
node 5 size: 32253 MB
node 5 free: 32214 MB
node 6 cpus: 24 25 26 27 88 89 90 91
node 6 size: 32254 MB
node 6 free: 32129 MB
node 7 cpus: 28 29 30 31 92 93 94 95
node 7 size: 32241 MB

```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Platform Notes (Continued)

```

node 7 free: 32054 MB
node 8 cpus: 32 33 34 35 96 97 98 99
node 8 size: 32224 MB
node 8 free: 32167 MB
node 9 cpus: 36 37 38 39 100 101 102 103
node 9 size: 32253 MB
node 9 free: 32215 MB
node 10 cpus: 40 41 42 43 104 105 106 107
node 10 size: 32254 MB
node 10 free: 32219 MB
node 11 cpus: 44 45 46 47 108 109 110 111
node 11 size: 32253 MB
node 11 free: 32217 MB
node 12 cpus: 48 49 50 51 112 113 114 115
node 12 size: 32254 MB
node 12 free: 32217 MB
node 13 cpus: 52 53 54 55 116 117 118 119
node 13 size: 32253 MB
node 13 free: 32215 MB
node 14 cpus: 56 57 58 59 120 121 122 123
node 14 size: 32254 MB
node 14 free: 32216 MB
node 15 cpus: 60 61 62 63 124 125 126 127
node 15 size: 32252 MB
node 15 free: 32217 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
 0:  10 11 12 12 12 12 12 12 32 32 32 32 32 32 32 32
 1:  11 10 12 12 12 12 12 12 32 32 32 32 32 32 32 32
 2:  12 12 10 11 12 12 12 12 32 32 32 32 32 32 32 32
 3:  12 12 11 10 12 12 12 12 32 32 32 32 32 32 32 32
 4:  12 12 12 12 10 11 12 12 32 32 32 32 32 32 32 32
 5:  12 12 12 12 11 10 12 12 32 32 32 32 32 32 32 32
 6:  12 12 12 12 12 12 10 11 32 32 32 32 32 32 32 32
 7:  12 12 12 12 12 12 11 10 32 32 32 32 32 32 32 32
 8:  32 32 32 32 32 32 32 32 32 10 11 12 12 12 12 12
 9:  32 32 32 32 32 32 32 32 32 11 10 12 12 12 12 12
10:  32 32 32 32 32 32 32 32 32 12 12 10 11 12 12 12
11:  32 32 32 32 32 32 32 32 32 12 12 11 10 12 12 12
12:  32 32 32 32 32 32 32 32 32 12 12 12 12 10 11 12
13:  32 32 32 32 32 32 32 32 32 12 12 12 12 11 10 12
14:  32 32 32 32 32 32 32 32 32 12 12 12 12 12 10 11
15:  32 32 32 32 32 32 32 32 32 12 12 12 12 12 11 10

```

```

From /proc/meminfo
MemTotal:      527962184 kB
HugePages_Total:      0

```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Sep-2019
Hardware Availability: Oct-2019
Software Availability: Aug-2019

Platform Notes (Continued)

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"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"
```

uname -a:

```
Linux suse15-sp1 4.12.14-197.7-default #1 SMP Mon Jun 24 08:33:54 UTC 2019 (650fd32)
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: conditional, RSB filling
```

run-level 3 Aug 22 20:07

SPEC is set to: /home/cpu2017-1.0.5

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   444G   20G  425G   5% /
```

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 Dell Inc. 0.4.4 08/05/2019
Memory:
16x 802C869D802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
```

(End of data from sysinfo program)

Compiler Version Notes

```
=====
C          | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
          | 644.nab_s(base, peak)
-----
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Compiler Version Notes (Continued)

```
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
```

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

```
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
```

```
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
```

```
=====  
Fortran | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
        | 654.roms_s(base, peak)
```

```
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
```

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

```
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Compiler Version Notes (Continued)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
 AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
 Target: x86_64-unknown-linux-gnu
 Thread model: posix
 InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Base Compiler Invocation

C benchmarks:

clang

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
 607.cactuBSSN_s: -DSPEC_LP64
 619.lbm_s: -DSPEC_LP64
 621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
 627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
 628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -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,-mllvm -Wl,-function-specialize
 -Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
 -Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
 -march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Base Optimization Flags (Continued)

C benchmarks (continued):

```
-fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist  
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp  
-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000  
-flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp  
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm  
-ljemalloc -lflang
```

Fortran benchmarks:

```
-flto -Wl,-mllvm -Wl,-function-specialize  
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC  
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver2  
-funroll-loops -Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs  
-Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp -DUSE_OPENMP  
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc  
-lflang
```

Benchmarks using both Fortran and C:

```
-flto -Wl,-mllvm -Wl,-function-specialize  
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC  
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math  
-march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50  
-fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist  
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp  
-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000  
-flv-function-specialization -funroll-loops -Mrecursive -z muldefs  
-Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp -DUSE_OPENMP  
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc  
-lflang
```

Benchmarks using Fortran, C, and C++:

```
-std=c++98 -flto -Wl,-mllvm -Wl,-function-specialize  
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2  
-fstruct-layout=3 -mllvm -unroll-threshold=50 -fremap-arrays  
-mllvm -function-specialize -mllvm -enable-gvn-hoist  
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp  
-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000  
-flv-function-specialization -mllvm -loop-unswitch-threshold=200000  
-mllvm -unroll-threshold=100 -mllvm -enable-partial-unswitch  
-funroll-loops -Mrecursive -z muldefs -Kieee -fno-finite-math-only  
-DSPEC_OPENMP -fopenmp -DUSE_OPENMP -fopenmp=libomp -lomp -lpthread  
-ldl -lmvec -lamdlibm -ljemalloc -lflang
```



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECSpeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECSpeed®2017_fp_peak = 160

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Sep-2019
Hardware Availability: Oct-2019
Software Availability: Aug-2019

Base Other Flags

C benchmarks:
-Wno-return-type

Fortran benchmarks:
-Wno-return-type

Benchmarks using both Fortran and C:
-Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Peak Optimization Flags (Continued)

619.lbm_s (continued):

```
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang
```

638.imagick_s: basepeak = yes

644.nab_s: Same as 619.lbm_s

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

```
654.roms_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver2
-funroll-loops -Mrecursive -mllvm -vector-library=LIBMVEC
-Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lmvec -lamdlibm -ljemalloc -lflang
```

Benchmarks using both Fortran and C:

```
621.wrf_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -O3 -funroll-loops
-Mrecursive -Kieee -fno-finite-math-only -DSPEC_OPENMP
-fopenmp -DUSE_OPENMP -fopenmp=libomp -lomp -lpthread
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 155

PowerEdge C6525 (AMD EPYC 7452, 2.35 GHz)

SPECspeed®2017_fp_peak = 160

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Oct-2019

Software Availability: Aug-2019

Peak Optimization Flags (Continued)

621.wrf_s (continued):

-ldl -lmvec -lamdlibm -ljemalloc -lflang

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

Peak Other Flags

C benchmarks:

-Wno-return-type

Fortran benchmarks:

-Wno-return-type

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/aocc200-flags-B1-speed-Dell.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE5.html>

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

<http://www.spec.org/cpu2017/flags/aocc200-flags-B1-speed-Dell.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE5.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 2019-08-26 23:59:02-0400.

Report generated on 2019-10-29 16:10:40 by CPU2017 PDF formatter v6255.

Originally published on 2019-10-29.