



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_fp\_base = 526

SPECrate®2017\_fp\_peak = 576

CPU2017 License: 55

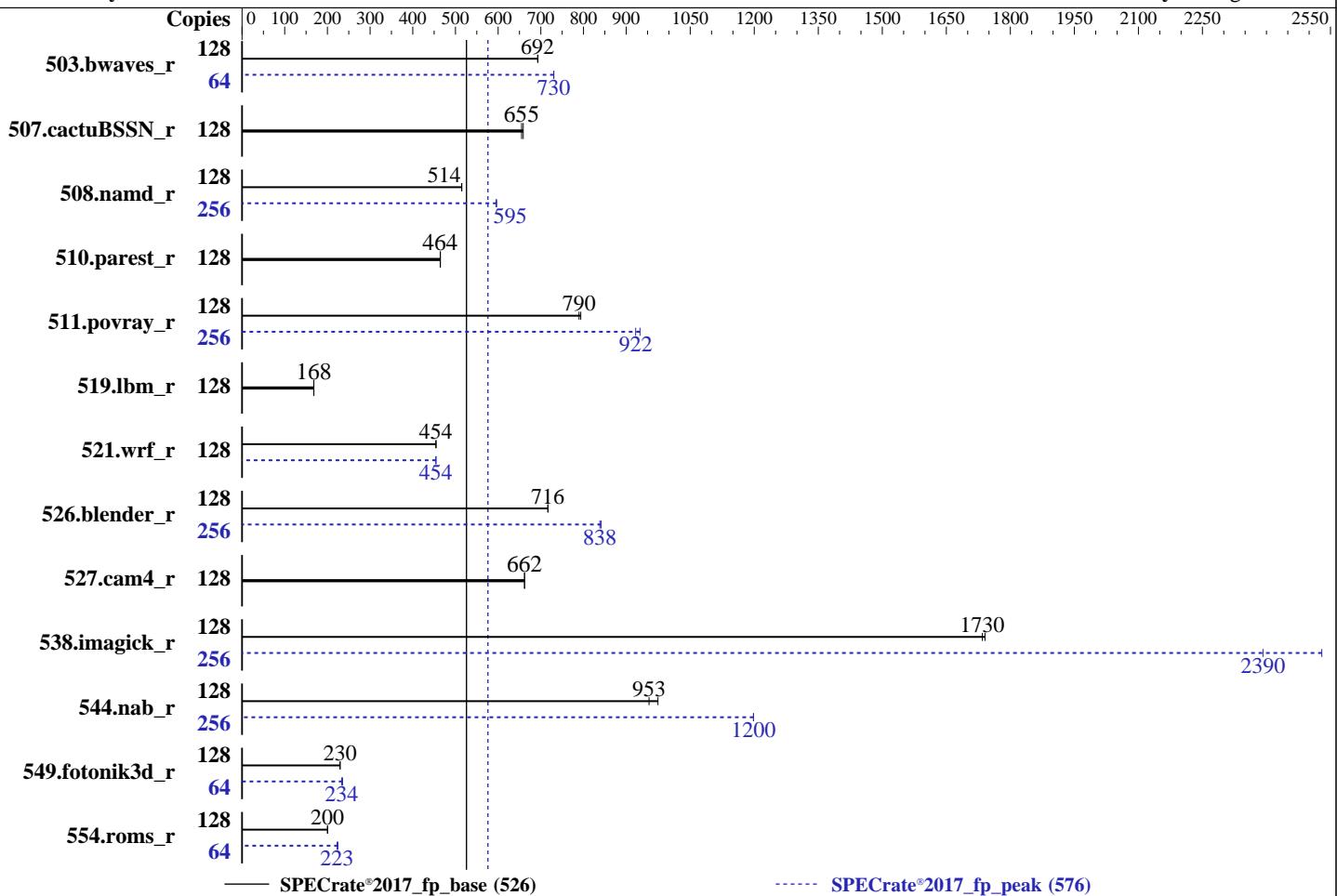
Test Date: Nov-2019

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Aug-2019



— SPECrate®2017\_fp\_base (526)

----- SPECrate®2017\_fp\_peak (576)

## Hardware

CPU Name: AMD EPYC 7H12  
 Max MHz: 3300  
 Nominal: 2600  
 Enabled: 128 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: 256 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)  
 Storage: 2 x 960 GB SAS SSD  
 Other: None

## Software

OS: SUSE Linux Enterprise Server 15 SP1  
 Compiler: kernel 4.12.14-195-default  
 Parallel: C/C++/Fortran: Version 2.0.0 of AOCC  
 Firmware: No  
 File System: Version 1.2.5 released Nov-2019  
 System State: xfs  
 Base Pointers: Run level 3 (multi-user)  
 Peak Pointers: 64-bit  
 Other: jemalloc: jemalloc memory allocator library v5.2.0  
 Power Management: BIOS set to prefer performance at the cost of additional power usage.



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PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)

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## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	128	1851	693	<b>1854</b>	<b>692</b>			64	879	730	<b>879</b>	<b>730</b>				
507.cactusBSSN_r	128	<b>247</b>	<b>655</b>	246	659			128	<b>247</b>	<b>655</b>	246	659				
508.namd_r	128	236	515	<b>236</b>	<b>514</b>			256	408	597	<b>409</b>	<b>595</b>				
510.parest_r	128	<b>721</b>	<b>464</b>	720	465			128	<b>721</b>	<b>464</b>	720	465				
511.povray_r	128	377	794	<b>379</b>	<b>790</b>			256	641	932	<b>648</b>	<b>922</b>				
519.lbm_r	128	801	168	<b>803</b>	<b>168</b>			128	801	168	<b>803</b>	<b>168</b>				
521.wrf_r	128	<b>632</b>	<b>454</b>	631	455			128	<b>631</b>	<b>454</b>	631	454				
526.blender_r	128	272	717	<b>272</b>	<b>716</b>			256	463	841	<b>465</b>	<b>838</b>				
527.cam4_r	128	<b>338</b>	<b>662</b>	338	662			128	<b>338</b>	<b>662</b>	338	662				
538.imagick_r	128	<b>184</b>	<b>1730</b>	183	1740			256	252	2530	<b>266</b>	<b>2390</b>				
544.nab_r	128	<b>226</b>	<b>953</b>	221	974			256	360	1200	<b>360</b>	<b>1200</b>				
549.fotonik3d_r	128	2171	230	<b>2172</b>	<b>230</b>			64	1059	235	<b>1068</b>	<b>234</b>				
554.roms_r	128	<b>1017</b>	<b>200</b>	1015	200			64	453	225	<b>457</b>	<b>223</b>				

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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

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## 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)

## Environment Variables Notes

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

```
LD_LIBRARY_PATH =
    "/root/cpu2017-1.1.0/amd_rate_aocc200_rome_C_lib/64;/root/cpu2017-1.1.0/
     amd_rate_aocc200_rome_C_lib/32:"
MALLOC_CONF = "retain:true"
```

## General Notes

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 -fno-jemalloc 5.2.0 is available here:

<https://github.com/jemalloc/jemalloc/releases/download/5.2.0/jemalloc-5.2.0.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

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## Platform Notes (Continued)

Memory Interleaving set to Disabled

Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011  
running on linux-g3ob Mon Nov 18 17:31:58 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>

From /proc/cpuinfo  
model name : AMD EPYC 7H12 64-Core Processor  
2 "physical id"s (chips)  
256 "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 : 64  
siblings : 128  
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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52  
53 54 55 56 57 58 59 60 61 62 63  
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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52  
53 54 55 56 57 58 59 60 61 62 63

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): 256  
On-line CPU(s) list: 0-255  
Thread(s) per core: 2  
Core(s) per socket: 64  
Socket(s): 2  
NUMA node(s): 32  
Vendor ID: AuthenticAMD  
CPU family: 23  
Model: 49  
Model name: AMD EPYC 7H12 64-Core Processor  
Stepping: 0  
CPU MHz: 2595.189  
BogoMIPS: 5190.37  
Virtualization: AMD-V  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 512K

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## Platform Notes (Continued)

L3 cache: 16384K  
NUMA node0 CPU(s): 0-3,128-131  
NUMA node1 CPU(s): 4-7,132-135  
NUMA node2 CPU(s): 8-11,136-139  
NUMA node3 CPU(s): 12-15,140-143  
NUMA node4 CPU(s): 16-19,144-147  
NUMA node5 CPU(s): 20-23,148-151  
NUMA node6 CPU(s): 24-27,152-155  
NUMA node7 CPU(s): 28-31,156-159  
NUMA node8 CPU(s): 32-35,160-163  
NUMA node9 CPU(s): 36-39,164-167  
NUMA node10 CPU(s): 40-43,168-171  
NUMA node11 CPU(s): 44-47,172-175  
NUMA node12 CPU(s): 48-51,176-179  
NUMA node13 CPU(s): 52-55,180-183  
NUMA node14 CPU(s): 56-59,184-187  
NUMA node15 CPU(s): 60-63,188-191  
NUMA node16 CPU(s): 64-67,192-195  
NUMA node17 CPU(s): 68-71,196-199  
NUMA node18 CPU(s): 72-75,200-203  
NUMA node19 CPU(s): 76-79,204-207  
NUMA node20 CPU(s): 80-83,208-211  
NUMA node21 CPU(s): 84-87,212-215  
NUMA node22 CPU(s): 88-91,216-219  
NUMA node23 CPU(s): 92-95,220-223  
NUMA node24 CPU(s): 96-99,224-227  
NUMA node25 CPU(s): 100-103,228-231  
NUMA node26 CPU(s): 104-107,232-235  
NUMA node27 CPU(s): 108-111,236-239  
NUMA node28 CPU(s): 112-115,240-243  
NUMA node29 CPU(s): 116-119,244-247  
NUMA node30 CPU(s): 120-123,248-251  
NUMA node31 CPU(s): 124-127,252-255  
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mttr 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 aperf fm perf pnpi pclmulqdq monitor ssse3 fma cx16 sse4\_1 sse4\_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf\_lm cmp\_legacy svm extapic cr8\_legacy abm sse4a misalign ssse3 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 cqmp rdt\_a rdseed adx smap clflushopt clwb sha\_ni xsaveopt xsavec xgetbv1 xsaves cqmp\_llc cqmp\_occup\_llc cqmp\_mbm\_total cqmp\_mbm\_local clzero irperf xsaveerptr arat npt lbrv svm\_lock nrrip\_save tsc\_scale vmcb\_clean flushbyasid decodeassists pausefilter pfthreshold avic v\_vmsave\_vmload vgif umip rdpid overflow\_recov succor smca

/proc/cpuinfo cache data

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## Platform Notes (Continued)

cache size : 512 KB

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

```
available: 32 nodes (0-31)
node 0 cpus: 0 1 2 3 128 129 130 131
node 0 size: 15548 MB
node 0 free: 15166 MB
node 1 cpus: 4 5 6 7 132 133 134 135
node 1 size: 16126 MB
node 1 free: 15801 MB
node 2 cpus: 8 9 10 11 136 137 138 139
node 2 size: 16126 MB
node 2 free: 15772 MB
node 3 cpus: 12 13 14 15 140 141 142 143
node 3 size: 16125 MB
node 3 free: 15776 MB
node 4 cpus: 16 17 18 19 144 145 146 147
node 4 size: 16126 MB
node 4 free: 15820 MB
node 5 cpus: 20 21 22 23 148 149 150 151
node 5 size: 16126 MB
node 5 free: 15803 MB
node 6 cpus: 24 25 26 27 152 153 154 155
node 6 size: 16126 MB
node 6 free: 15813 MB
node 7 cpus: 28 29 30 31 156 157 158 159
node 7 size: 16125 MB
node 7 free: 15817 MB
node 8 cpus: 32 33 34 35 160 161 162 163
node 8 size: 16126 MB
node 8 free: 15814 MB
node 9 cpus: 36 37 38 39 164 165 166 167
node 9 size: 16126 MB
node 9 free: 15818 MB
node 10 cpus: 40 41 42 43 168 169 170 171
node 10 size: 16126 MB
node 10 free: 15810 MB
node 11 cpus: 44 45 46 47 172 173 174 175
node 11 size: 16125 MB
node 11 free: 15809 MB
node 12 cpus: 48 49 50 51 176 177 178 179
node 12 size: 16126 MB
node 12 free: 15798 MB
node 13 cpus: 52 53 54 55 180 181 182 183
node 13 size: 16126 MB
node 13 free: 15814 MB
```

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## Platform Notes (Continued)

```
node 14 cpus: 56 57 58 59 184 185 186 187
node 14 size: 16126 MB
node 14 free: 15820 MB
node 15 cpus: 60 61 62 63 188 189 190 191
node 15 size: 16113 MB
node 15 free: 15808 MB
node 16 cpus: 64 65 66 67 192 193 194 195
node 16 size: 16126 MB
node 16 free: 15815 MB
node 17 cpus: 68 69 70 71 196 197 198 199
node 17 size: 16126 MB
node 17 free: 15818 MB
node 18 cpus: 72 73 74 75 200 201 202 203
node 18 size: 16126 MB
node 18 free: 15818 MB
node 19 cpus: 76 77 78 79 204 205 206 207
node 19 size: 16125 MB
node 19 free: 15812 MB
node 20 cpus: 80 81 82 83 208 209 210 211
node 20 size: 16126 MB
node 20 free: 15810 MB
node 21 cpus: 84 85 86 87 212 213 214 215
node 21 size: 16126 MB
node 21 free: 15816 MB
node 22 cpus: 88 89 90 91 216 217 218 219
node 22 size: 16126 MB
node 22 free: 15818 MB
node 23 cpus: 92 93 94 95 220 221 222 223
node 23 size: 16125 MB
node 23 free: 15818 MB
node 24 cpus: 96 97 98 99 224 225 226 227
node 24 size: 16126 MB
node 24 free: 15816 MB
node 25 cpus: 100 101 102 103 228 229 230 231
node 25 size: 16126 MB
node 25 free: 15818 MB
node 26 cpus: 104 105 106 107 232 233 234 235
node 26 size: 16096 MB
node 26 free: 15793 MB
node 27 cpus: 108 109 110 111 236 237 238 239
node 27 size: 16125 MB
node 27 free: 15819 MB
node 28 cpus: 112 113 114 115 240 241 242 243
node 28 size: 16126 MB
node 28 free: 15819 MB
node 29 cpus: 116 117 118 119 244 245 246 247
node 29 size: 16126 MB
```

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```
node 29 free: 15815 MB
node 30 cpus: 120 121 122 123 248 249 250 251
node 30 size: 16126 MB
node 30 free: 15813 MB
node 31 cpus: 124 125 126 127 252 253 254 255
node 31 size: 16122 MB
node 31 free: 15820 MB
node distances:
node   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
  0: 10 11 11 11 12 12 12 12 12 12 12 12 12 12 12 32 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  1: 11 10 11 11 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  2: 11 11 10 11 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  3: 11 11 11 10 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  4: 12 12 12 12 10 11 11 11 11 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  5: 12 12 12 12 12 11 10 11 11 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  6: 12 12 12 12 12 11 11 10 11 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  7: 12 12 12 12 12 11 11 11 10 12 12 12 12 12 12 12 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  8: 12 12 12 12 12 12 12 12 12 12 10 11 11 11 11 11 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
  9: 12 12 12 12 12 12 12 12 12 12 11 10 11 11 11 11 12 32 32 32
  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 10: 12 12 12 12 12 12 12 12 12 12 12 11 11 10 11 11 12 32 32 32
 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 11: 12 12 12 12 12 12 12 12 12 12 11 11 11 11 11 10 12 32 32 32
 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 12: 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 13: 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 14: 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 15: 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32
 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
 16: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 10 11 11
 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12
 17: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 10 11
 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12
 18: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 10
 11
```

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12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	10
19:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
20:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
21:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
11	10	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
22:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
11	11	10	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
23:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
11	11	11	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
24:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	
25:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	11	10	11	11	12	12	12	12	12	12	12	12	12	12	12	12	
26:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	11	11	10	11	12	12	12	12	12	12	12	12	12	12	12	12	
27:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	11	11	11	10	12	12	12	12	12	12	12	12	12	12	12	12	
28:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	12	12	12	12	12	10	11	11	11	11	11	11	11	11	11	11	
29:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	12	12	12	12	12	11	10	12	12	12	12	12	12	12	12	12	
30:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	12	12	12	12	12	11	11	10	11	11	11	11	11	11	11	11	
31:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
12	12	12	12	12	12	12	12	12	11	11	11	11	10	10	10	10	10	10	10	

From /proc/meminfo

```
MemTotal:      527783152 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"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:15:sp1"
```

uname -a:

```
Linux linux-g3ob 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECCrate®2017\_fp\_base = 526

PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)

SPECCrate®2017\_fp\_peak = 576

CPU2017 License: 55

Test Date: Nov-2019

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Platform Notes (Continued)

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault):	Not affected
Microarchitectural Data Sampling:	Not affected
CVE-2017-5754 (Meltdown):	Not affected
CVE-2018-3639 (Speculative Store Bypass):	Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):	Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Full AMD retrpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Nov 18 11:00 last=5

SPEC is set to: /root/cpu2017-1.1.0  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda2 xfs 440G 41G 400G 10% /

From /sys/devices/virtual/dmi/id  
BIOS: Dell Inc. 1.2.5 11/14/2019  
Vendor: Dell Inc.  
Product: PowerEdge R7525  
Product Family: PowerEdge  
Serial: 1234567

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.

Memory:  
7x 802C80B3802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200  
8x 802C869D802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200  
1x 80AD80B380AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200  
16x Not Specified Not Specified

(End of data from sysinfo program)

## Compiler Version Notes

=====

C	519.lbm_r(base, peak) 538.imagick_r(base, peak)   544.nab_r(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)

(Continued on next page)



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CPU2017 License: 55

Test Date: Nov-2019

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Compiler Version Notes (Continued)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

=====

C++ | 508.namd\_r(base, peak) 510.parest\_r(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

=====

C++, C | 511.povray\_r(base, peak) 526.blender\_r(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

=====

C++, C, Fortran | 507.cactusBSSN\_r(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

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)

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SPECrate®2017\_fp\_peak = 576

CPU2017 License: 55

Test Date: Nov-2019

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Compiler Version Notes (Continued)

InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

=====

Fortran	503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
	554.roms_r(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	521.wrf_r(base, peak) 527.cam4_r(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

## Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using both C and C++:

clang++ clang

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)

SPECrate®2017\_fp\_base = 526

SPECrate®2017\_fp\_peak = 576

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2019

Hardware Availability: Feb-2020

Software Availability: Aug-2019

## Base Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:

clang++ clang flang

## Base Portability Flags

503.bwaves\_r: -DSPEC\_LP64  
507.cactusBSSN\_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 -Mbyteswapio -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,-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 -z muldefs -lmvec -lamdlib -ljemalloc  
-lflang

C++ benchmarks:

-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  
-mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC  
-mllvm -unroll-threshold=100 -flv-function-specialization  
-mllvm -enable-partial-unswitch -z muldefs -lmvec -lamdlib  
-ljemalloc -lflang

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

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CPU2017 License: 55

Test Date: Nov-2019

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Base Optimization Flags (Continued)

Fortran benchmarks:

```
-futto -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 -lmvec -lamdlibm -ljemalloc -lflang
```

Benchmarks using both Fortran and C:

```
-futto -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 -lmvec -lamdlibm -ljemalloc -lflang
```

Benchmarks using both C and C++:

```
-std=c++98 -futto -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 -z muldefs  
-lmvec -lamdlibm -ljemalloc -lflang
```

Benchmarks using Fortran, C, and C++:

```
-std=c++98 -futto -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  
-lmvec -lamdlibm -ljemalloc -lflang
```



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc. PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)	SPECrate®2017_fp_base = 526  <b>SPECrate®2017_fp_peak = 576</b>
CPU2017 License: 55  Test Sponsor: Dell Inc.  Tested by: Dell Inc.	Test Date: Nov-2019  Hardware Availability: Feb-2020  Software Availability: Aug-2019

## Peak Compiler Invocation

C benchmarks:

clang

## C++ benchmarks:

clang++

## Fortran benchmarks:

flang

### Benchmarks using both Fortran and C:

flang clang

### Benchmarks using both C and C++:

clang++ clang

## Benchmarks using Fortran, C, and C++:

clang++ clang flang

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

519.lbm\_r: basepeak = yes

```
538.imagick_r: -fetto -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 -lmvec -lamdlibm -ljemalloc  
-lflang
```

**(Continued on next page)**



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)

SPECrate®2017\_fp\_base = 526

SPECrate®2017\_fp\_peak = 576

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2019

Hardware Availability: Feb-2020

Software Availability: Aug-2019

## Peak Optimization Flags (Continued)

544.nab\_r: Same as 538.imagick\_r

C++ benchmarks:

```
508.namd_r: -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 -Ofast
-march=znver2 -fvl-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -lmvec -lamdlibm -ljemalloc
-lflang
```

510.parest\_r: basepeak = yes

Fortran benchmarks:

```
503.bwaves_r: -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 -Kieee
-fno-finite-math-only -lmvec -lamdlibm -ljemalloc
-lflang
```

549.fotonik3d\_r: Same as 503.bwaves\_r

```
554.roms_r: -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 -lmvec -lamdlibm -ljemalloc
-lflang
```

Benchmarks using both Fortran and C:

```
521.wrf_r: -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
```

(Continued on next page)



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CPU2017 License: 55

Test Date: Nov-2019

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Peak Optimization Flags (Continued)

521.wrf\_r (continued):

```
-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 -lmvec
-lamdlibm -ljemalloc -lflang
```

527.cam4\_r: basepeak = yes

Benchmarks using both C and C++:

```
511.povray_r: -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,-x86-use-vzeroupper=false -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 -mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000 -lmvec -lamdlibm
-ljemalloc -lflang
```

```
526.blender_r: -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 -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 -mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

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PowerEdge R7525 (AMD EPYC 7H12, 2.60 GHz)

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SPECrate®2017\_fp\_base = 526

SPECrate®2017\_fp\_peak = 576

Test Date: Nov-2019

Hardware Availability: Feb-2020

Software Availability: Aug-2019

## Peak Optimization Flags (Continued)

526.blender\_r (continued):

```
-mllvm -loop-unswitch-threshold=200000 -lmvec -lamdlibm  
-ljemalloc -lflang
```

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

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE7.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-revE7.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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