SPEC CPU®2017 Floating Point Speed Result

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Dell Inc.

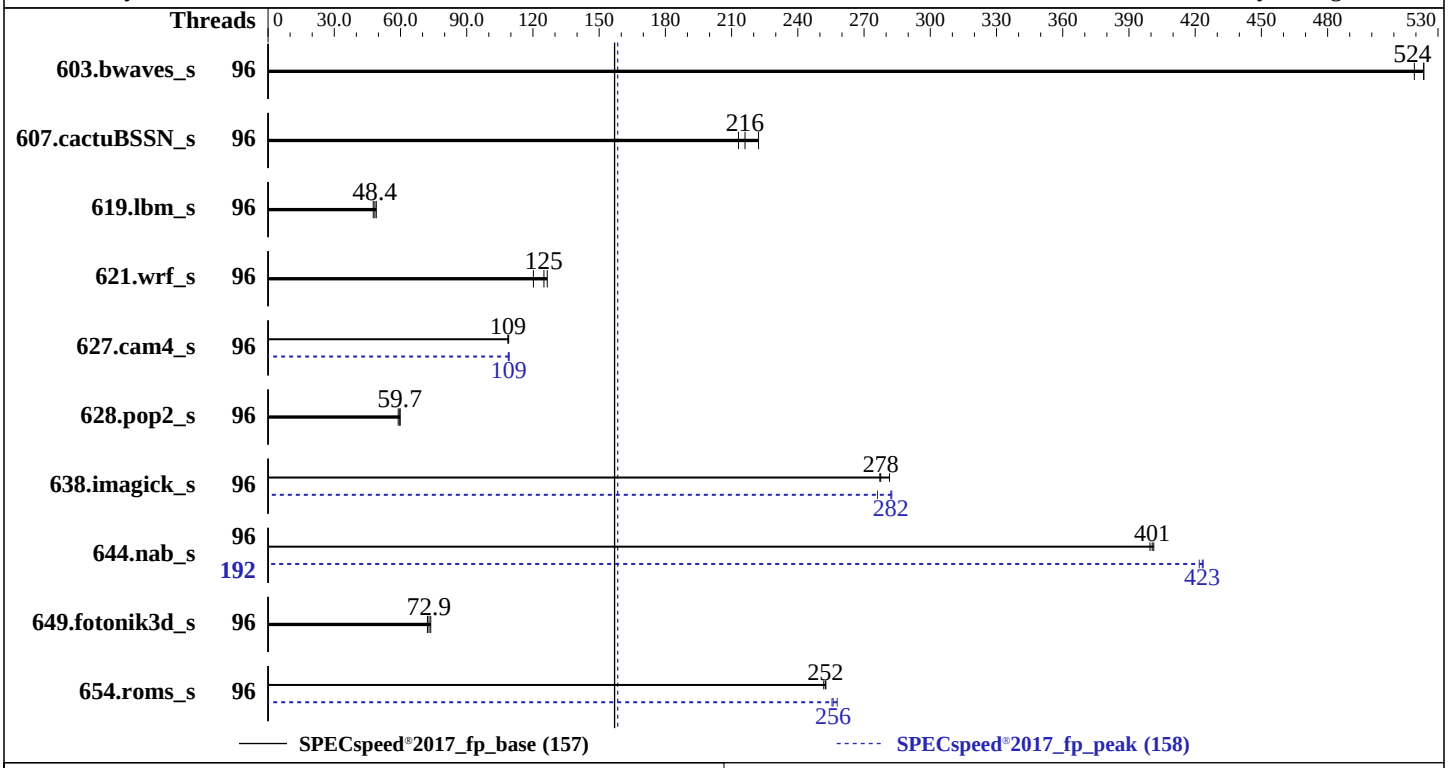
PowerEdge C6525 (AMD EPYC 7552, 2.20 GHz)

SPECspeed®2017_fp_base = 157

SPECspeed®2017_fp_peak = 158

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

Test Date: Dec-2019
Hardware Availability: Feb-2020
Software Availability: Aug-2019



Hardware

CPU Name:	AMD EPYC 7552
Max MHz:	3300
Nominal:	2200
Enabled:	96 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:	192 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:	1 x 480 GB SATA SSD
Other:	None

Software

OS:	SUSE Linux Enterprise Server 15 SP1 kernel 4.12.14-195-default
Compiler:	C/C++/Fortran: Version 2.0.0 of AOCC
Parallel:	Yes
Firmware:	Version 1.2.2 released Nov-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:	BIOS set to prefer performance at the cost of additional power usage.

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	96	114	519	**113**	**524**	113	524	96	114	519	**113**	**524**	113	524
607.cactuBSSN_s	96	78.2	213	75.0	222	**77.1**	**216**	96	78.2	213	75.0	222	**77.1**	**216**
619.lbm_s	96	**108**	**48.4**	110	47.7	107	49.0	96	**108**	**48.4**	110	47.7	107	49.0
621.wrf_s	96	105	126	110	120	**106**	**125**	96	105	126	110	120	**106**	**125**
627.cam4_s	96	81.6	109	**81.5**	**109**	81.3	109	96	81.5	109	**81.2**	**109**	81.2	109
628.pop2_s	96	**199**	**59.7**	198	59.8	201	59.0	96	**199**	**59.7**	198	59.8	201	59.0
638.imagick_s	96	52.1	277	**52.0**	**278**	51.2	282	96	52.3	276	**51.1**	**282**	51.1	283
644.nab_s	96	43.5	401	43.7	400	**43.6**	**401**	192	41.2	424	41.4	422	**41.3**	**423**
649.fotonik3d_s	96	**125**	**72.9**	124	73.7	126	72.2	96	**125**	**72.9**	124	73.7	126	72.2
654.roms_s	96	**62.4**	**252**	62.5	252	62.3	253	96	61.1	258	61.6	255	**61.5**	**256**

SPECspeed®2017_fp_base = 157

SPECspeed®2017_fp_peak = 158

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)
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-191"
LD_LIBRARY_PATH =
     "/root/cpu2017-1.0.5/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/64;/root
     /cpu2017-1.0.5/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/32:"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "192"

Environment variables set by runcpu during the 627.cam4_s peak run:
GOMP_CPU_AFFINITY = "0-95"

Environment variables set by runcpu during the 638.imagick_s peak run:
GOMP_CPU_AFFINITY = "0-95"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 96 1 97 2 98 3 99 4 100 5 101 6 102 7 103 8 104 9 105
     10 106 11 107 12 108 13 109 14 110 15 111 16 112 17 113 18 114 19 115 20
     116 21 117 22 118 23 119 24 120 25 121 26 122 27 123 28 124 29 125 30
     126 31 127 32 128 33 129 34 130 35 131 36 132 37 133 38 134 39 135 40
     136 41 137 42 138 43 139 44 140 45 141 46 142 47 143 48 144 49 145 50
     146 51 147 52 148 53 149 54 150 55 151 56 152 57 153 58 154 59 155 60
     156 61 157 62 158 63 159 64 160 65 161 66 162 67 163 68 164 69 165 70
     166 71 167 72 168 73 169 74 170 75 171 76 172 77 173 78 174 79 175 80
     176 81 177 82 178 83 179 84 180 85 181 86 182 87 183 88 184 89 185 90
     186 91 187 92 188 93 189 94 190 95 191"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-95"
```

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 -flto
jemalloc 5.1.0 is available here:
```

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General Notes (Continued)

```
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 1
  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 /root/cpu2017-1.0.5/cpu2017-1.1.0/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on linux-g3ob Sat Dec 14 13:52:54 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 7552 48-Core Processor
       2  "physical id"s (chips)
       192 "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 : 48
       siblings  : 96
       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
       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

 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):              192
```

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Platform Notes (Continued)

```
On-line CPU(s) list: 0-191
Thread(s) per core:  2
Core(s) per socket:  48
Socket(s):           2
NUMA node(s):        24
Vendor ID:           AuthenticAMD
CPU family:          23
Model:               49
Model name:          AMD EPYC 7552 48-Core Processor
Stepping:            0
CPU MHz:             2195.741
BogoMIPS:            4391.48
Virtualization:      AMD-V
L1d cache:           32K
L1i cache:           32K
L2 cache:            512K
L3 cache:            16384K
NUMA node0 CPU(s):   0-3,96-99
NUMA node1 CPU(s):   4-7,100-103
NUMA node2 CPU(s):   8-11,104-107
NUMA node3 CPU(s):   12-15,108-111
NUMA node4 CPU(s):   16-19,112-115
NUMA node5 CPU(s):   20-23,116-119
NUMA node6 CPU(s):   24-27,120-123
NUMA node7 CPU(s):   28-31,124-127
NUMA node8 CPU(s):   32-35,128-131
NUMA node9 CPU(s):   36-39,132-135
NUMA node10 CPU(s):  40-43,136-139
NUMA node11 CPU(s):  44-47,140-143
NUMA node12 CPU(s):  48-51,144-147
NUMA node13 CPU(s):  52-55,148-151
NUMA node14 CPU(s):  56-59,152-155
NUMA node15 CPU(s):  60-63,156-159
NUMA node16 CPU(s):  64-67,160-163
NUMA node17 CPU(s):  68-71,164-167
NUMA node18 CPU(s):  72-75,168-171
NUMA node19 CPU(s):  76-79,172-175
NUMA node20 CPU(s):  80-83,176-179
NUMA node21 CPU(s):  84-87,180-183
NUMA node22 CPU(s):  88-91,184-187
NUMA node23 CPU(s):  92-95,188-191
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
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 misalignsse
3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
```


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Platform Notes (Continued)

```
      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_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: 24 nodes (0-23)
    node 0 cpus: 0 1 2 3 96 97 98 99
    node 0 size: 21051 MB
    node 0 free: 20994 MB
    node 1 cpus: 4 5 6 7 100 101 102 103
    node 1 size: 21501 MB
    node 1 free: 21450 MB
    node 2 cpus: 8 9 10 11 104 105 106 107
    node 2 size: 21502 MB
    node 2 free: 21470 MB
    node 3 cpus: 12 13 14 15 108 109 110 111
    node 3 size: 21501 MB
    node 3 free: 21445 MB
    node 4 cpus: 16 17 18 19 112 113 114 115
    node 4 size: 21501 MB
    node 4 free: 21479 MB
    node 5 cpus: 20 21 22 23 116 117 118 119
    node 5 size: 21503 MB
    node 5 free: 21092 MB
    node 6 cpus: 24 25 26 27 120 121 122 123
    node 6 size: 21501 MB
    node 6 free: 21307 MB
    node 7 cpus: 28 29 30 31 124 125 126 127
    node 7 size: 21501 MB
    node 7 free: 21474 MB
    node 8 cpus: 32 33 34 35 128 129 130 131
    node 8 size: 21503 MB
    node 8 free: 21454 MB
    node 9 cpus: 36 37 38 39 132 133 134 135
    node 9 size: 21501 MB
    node 9 free: 21471 MB
    node 10 cpus: 40 41 42 43 136 137 138 139
    node 10 size: 21501 MB
    node 10 free: 21468 MB
    node 11 cpus: 44 45 46 47 140 141 142 143
```

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Platform Notes (Continued)

```
node 11 size: 21490 MB
node 11 free: 21468 MB
node 12 cpus: 48 49 50 51 144 145 146 147
node 12 size: 21472 MB
node 12 free: 21450 MB
node 13 cpus: 52 53 54 55 148 149 150 151
node 13 size: 21501 MB
node 13 free: 21481 MB
node 14 cpus: 56 57 58 59 152 153 154 155
node 14 size: 21502 MB
node 14 free: 21482 MB
node 15 cpus: 60 61 62 63 156 157 158 159
node 15 size: 21501 MB
node 15 free: 21481 MB
node 16 cpus: 64 65 66 67 160 161 162 163
node 16 size: 21501 MB
node 16 free: 21473 MB
node 17 cpus: 68 69 70 71 164 165 166 167
node 17 size: 21503 MB
node 17 free: 21483 MB
node 18 cpus: 72 73 74 75 168 169 170 171
node 18 size: 21501 MB
node 18 free: 21479 MB
node 19 cpus: 76 77 78 79 172 173 174 175
node 19 size: 21501 MB
node 19 free: 21481 MB
node 20 cpus: 80 81 82 83 176 177 178 179
node 20 size: 21503 MB
node 20 free: 21482 MB
node 21 cpus: 84 85 86 87 180 181 182 183
node 21 size: 21501 MB
node 21 free: 21479 MB
node 22 cpus: 88 89 90 91 184 185 186 187
node 22 size: 21501 MB
node 22 free: 21480 MB
node 23 cpus: 92 93 94 95 188 189 190 191
node 23 size: 21501 MB
node 23 free: 21478 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
  0:  10  11  11  11  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
  32  32  32  32
  1:  11  10  11  11  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
  32  32  32  32
  2:  11  11  10  11  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
  32  32  32  32
```

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Platform Notes (Continued)

```
     3:  11  11  11  10  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
     4:  11  11  11  11  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
     5:  11  11  11  11  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     32  32  32  32
     6:  12  12  12  12  12  12  10  11  11  11  11  11  32  32  32  32  32  32  32  32
     32  32  32  32
     7:  12  12  12  12  12  12  11  10  11  11  11  11  32  32  32  32  32  32  32  32
     32  32  32  32
     8:  12  12  12  12  12  12  11  11  10  11  11  11  32  32  32  32  32  32  32  32
     32  32  32  32
     9:  12  12  12  12  12  12  11  11  11  10  11  11  32  32  32  32  32  32  32  32
     32  32  32  32
    10:  12  12  12  12  12  12  11  11  11  11  10  11  32  32  32  32  32  32  32  32
    32  32  32  32
    11:  12  12  12  12  12  12  11  11  11  11  11  10  32  32  32  32  32  32  32  32
    32  32  32  32
    12:  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  11  11  11  12  12
    12  12  12  12
    13:  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  11  11  11  12  12
    12  12  12  12
    14:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  11  11  11  12  12
    12  12  12  12
    15:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  10  11  11  12  12
    12  12  12  12
    16:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11  10  11  12  12
    12  12  12  12
    17:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11  11  10  12  12
    12  12  12  12
    18:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11
    11  11  11  11
    19:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10
    11  11  11  11
    20:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11
    10  11  11  11
    21:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11
    11  10  11  11
    22:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11
    11  11  10  11
    23:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11
    11  11  11  10

  From /proc/meminfo
     MemTotal:       527930332 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB
```


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Platform Notes (Continued)

```
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

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 retpoline, IBPB:
                                         conditional, IBRS_FW, STIBP: conditional, RSB
                                          filling

run-level 3 Dec 13 09:58

SPEC is set to: /root/cpu2017-1.0.5/cpu2017-1.1.0
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   440G   23G  418G   6% /

From /sys/devices/virtual/dmi/id
    BIOS:    Dell Inc. 1.2.2 11/13/2019
    Vendor:  Dell Inc.
    Product: PowerEdge C6525
    Product Family: PowerEdge

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:
    5x 802C80B3802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
    1x 802C8632802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
```

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Platform Notes (Continued)

```
     5x 802C869D802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
     5x 80AD863280AD HMA84GR7CJR4N-XN 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)
------------------------------------------------------------------------------
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
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  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
```


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Compiler Version Notes (Continued)

```
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
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

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Base Portability Flags (Continued)

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
-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

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Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
-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

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: basepeak = yes

638.imagick_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 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang

644.nab_s: Same as 638.imagick_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:

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Peak Optimization Flags (Continued)

621.wrf_s: basepeak = yes

627.cam4_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
-ldl -lmvec -lamdlibm -ljemalloc -lflang

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-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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