SPEC CPU®2017 Floating Point Rate Result

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ScaleMP

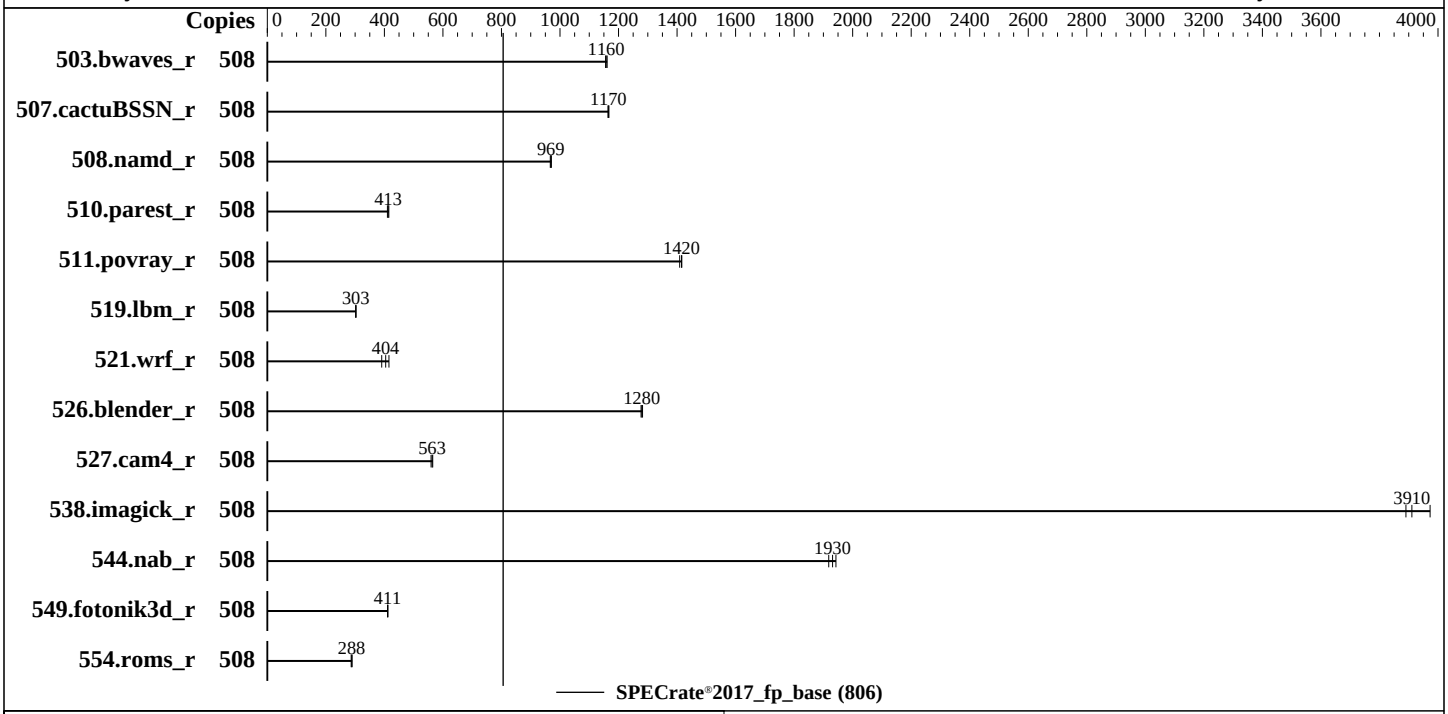
vSMP ServerONE
Supermicro A+ Server 2123BT-HNC0R (AMD EPYC 7702)

SPECrate®2017_fp_base = 806

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 2929
Test Sponsor: ScaleMP
Tested by: ScaleMP

Test Date: Dec-2019
Hardware Availability: Nov-2019
Software Availability: Nov-2019



Hardware

CPU Name:	AMD EPYC 7702
Max MHz:	3350
Nominal:	2000
Enabled:	256 cores, 4 chips, 2 threads/core
Orderable:	1-4 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:	1 TB (32 x 32 GB 2Rx4 PC4-2667V-L)
Storage:	1 TB ramfs
Other:	ScaleMP vSMP Foundation aggregates multiple servers into one shared-memory system. Hardware Details: vSMP System was aggregated using 2 units of Supermicro A+ Server 2123BT-HNC0R. The servers were connected using Mellanox InfiniBand EDR fabric.

Software

OS:	SUSE Linux Enterprise Server 15 SP1, kernel version 4.12.14-197.21.1.vSMP.2-default
Compiler:	C/C++/Fortran: Version 2.0.0 of AOCC
Parallel:	No
Firmware:	ScaleMP vSMP Foundation version 9.5.195.12 released Nov-2019
File System:	ramfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	jemalloc: jemalloc memory allocator library v5.2.1
Power Management:	--

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	508	4387	1160	4408	1160	**4399**	**1160**							
507.cactuBSSN_r	508	551	1170	**552**	**1170**	553	1160							
508.namd_r	508	**498**	**969**	497	971	499	967							
510.parest_r	508	3201	415	**3217**	**413**	3239	410							
511.povray_r	508	**838**	**1420**	838	1420	842	1410							
519.lbm_r	508	1773	302	**1770**	**303**	1769	303							
521.wrf_r	508	2911	391	2738	416	**2814**	**404**							
526.blender_r	508	603	1280	606	1280	**605**	**1280**							
527.cam4_r	508	1588	559	**1578**	**563**	1572	565							
538.imagick_r	508	318	3970	**323**	**3910**	325	3890							
544.nab_r	508	446	1920	440	1940	**443**	**1930**							
549.fotonik3d_r	508	4811	412	4813	411	**4813**	**411**							
554.roms_r	508	2818	286	2787	290	**2800**	**288**							

SPECrate®2017_fp_base = 806

SPECrate®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/
```

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
Set numa_stat=0 to improve page allocation performance
```

(Continued on next page)

Operating System Notes (Continued)

```
Set stat_interval=60 to reduce OS jitter

dirty_ratio, swappiness, zone_reclaim_mode, drop_caches, numa_stat and stat_interval 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)

Kernel Boot Parameter set with : nohz_full=!0
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/dev/shm/amd_rate_aocc200_rome_C_lib/64;/dev/shm/amd_rate_aocc200_rome_
     C_lib/32:/usr/local/lib:/usr/lib:/usr/lib64:/mnt/aocc-compiler-2.0.0/lib
     :/mnt/aocc-compiler-2.0.0/lib32:"
MALLOC_CONF = "retain:true,metadata_thp:always,thp:always"
```

General Notes

```
Environment variables set by runcpu before the start of the run:
 LD_LIBRARY_PATH=/usr/local/lib:$LD_LIBRARY_PATH
 LIBRARY_PATH=/usr/local/lib:$LIBRARY_PATH
 MALLOC_TOP_PAD_=$((16777216))
 MALLOC_TRIM_THRESHOLD_=$((16777216))

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 AMD64 AOCC v2.0.0 on this system with -Ofast -march=znver2
jemalloc 5.2.1 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.2.1/jemalloc-5.2.1.tar.bz2
```

Platform Notes

```
BIOS settings:
 Determinism Control = Manual
 Determinism Slider = Power
 cTDP Control = Manual
```

(Continued on next page)

Platform Notes (Continued)

```
cTDP = 180
Package Power Limit Control = Manual
Package Power Limit = 180
IOMMU = Enabled
APBDIS = 1
NUMA Nodes Per Socket = NPS4

Sysinfo program /dev/shm/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
running on 13d Mon Dec  9 23:46:42 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 7702 64-Core Processor
      4  "physical id"s (chips)
      512 "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
      physical 2: 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 3: 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:       47 bits physical, 48 bits virtual
     CPU(s):              512
     On-line CPU(s) list: 0-511
     Thread(s) per core:  2
     Core(s) per socket:  64
     Socket(s):           4
     NUMA node(s):        16
```

(Continued on next page)

Platform Notes (Continued)

```
      Vendor ID:           AuthenticAMD
      CPU family:          23
      Model:               49
      Model name:          AMD EPYC 7702 64-Core Processor
      Stepping:            0
      CPU MHz:             2000.000
      CPU max MHz:         2000.0000
      CPU min MHz:         1800.0000
      BogoMIPS:            3999.93
      L1d cache:           32K
      L1i cache:           32K
      L2 cache:            512K
      L3 cache:            16384K
      NUMA node0 CPU(s):   0-15,256-271
      NUMA node1 CPU(s):   16-31,272-287
      NUMA node2 CPU(s):   32-47,288-303
      NUMA node3 CPU(s):   48-63,304-319
      NUMA node4 CPU(s):   64-79,320-335
      NUMA node5 CPU(s):   80-95,336-351
      NUMA node6 CPU(s):   96-111,352-367
      NUMA node7 CPU(s):   112-127,368-383
      NUMA node8 CPU(s):   128-143,384-399
      NUMA node9 CPU(s):   144-159,400-415
      NUMA node10 CPU(s):  160-175,416-431
      NUMA node11 CPU(s):  176-191,432-447
      NUMA node12 CPU(s):  192-207,448-463
      NUMA node13 CPU(s):  208-223,464-479
      NUMA node14 CPU(s):  224-239,480-495
      NUMA node15 CPU(s):  240-255,496-511
      Flags:               fpu vme de pse tsc msr pae 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
      ssse3 fma cx16 sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
      cmp_legacy extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw 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: 16 nodes (0-15)
```

(Continued on next page)

Platform Notes (Continued)

```
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 256 257 258 259 260 261 262 263 264
265 266 267 268 269 270 271
node 0 size: 47876 MB
node 0 free: 47425 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 272 273 274 275 276 277
278 279 280 281 282 283 284 285 286 287
node 1 size: 59713 MB
node 1 free: 59312 MB
node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 288 289 290 291 292 293
294 295 296 297 298 299 300 301 302 303
node 2 size: 59713 MB
node 2 free: 59343 MB
node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 304 305 306 307 308 309
310 311 312 313 314 315 316 317 318 319
node 3 size: 59461 MB
node 3 free: 59111 MB
node 4 cpus: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 320 321 322 323 324 325
326 327 328 329 330 331 332 333 334 335
node 4 size: 59461 MB
node 4 free: 59123 MB
node 5 cpus: 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 336 337 338 339 340 341
342 343 344 345 346 347 348 349 350 351
node 5 size: 59461 MB
node 5 free: 59187 MB
node 6 cpus: 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 352 353 354
355 356 357 358 359 360 361 362 363 364 365 366 367
node 6 size: 59461 MB
node 6 free: 59193 MB
node 7 cpus: 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 368 369
370 371 372 373 374 375 376 377 378 379 380 381 382 383
node 7 size: 59461 MB
node 7 free: 59203 MB
node 8 cpus: 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 384 385
386 387 388 389 390 391 392 393 394 395 396 397 398 399
node 8 size: 48121 MB
node 8 free: 47859 MB
node 9 cpus: 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 400 401
402 403 404 405 406 407 408 409 410 411 412 413 414 415
node 9 size: 59461 MB
node 9 free: 59204 MB
node 10 cpus: 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 416 417
418 419 420 421 422 423 424 425 426 427 428 429 430 431
node 10 size: 59461 MB
node 10 free: 59208 MB
node 11 cpus: 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 432 433
434 435 436 437 438 439 440 441 442 443 444 445 446 447
node 11 size: 59461 MB
```

(Continued on next page)

Platform Notes (Continued)

```
   node 11 free: 59208 MB
   node 12 cpus: 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 448 449
   450 451 452 453 454 455 456 457 458 459 460 461 462 463
   node 12 size: 59461 MB
   node 12 free: 59205 MB
   node 13 cpus: 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 464 465
   466 467 468 469 470 471 472 473 474 475 476 477 478 479
   node 13 size: 59461 MB
   node 13 free: 59212 MB
   node 14 cpus: 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 480 481
   482 483 484 485 486 487 488 489 490 491 492 493 494 495
   node 14 size: 59461 MB
   node 14 free: 59202 MB
   node 15 cpus: 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 496 497
   498 499 500 501 502 503 504 505 506 507 508 509 510 511
   node 15 size: 59241 MB
   node 15 free: 58993 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
     0:  10  12  12  12  32  32  32  32 254 254 254 254 254 254 254 254
     1:  12  10  12  12  32  32  32  32 254 254 254 254 254 254 254 254
     2:  12  12  10  12  32  32  32  32 254 254 254 254 254 254 254 254
     3:  12  12  12  10  32  32  32  32 254 254 254 254 254 254 254 254
     4:  32  32  32  32  10  12  12  12 254 254 254 254 254 254 254 254
     5:  32  32  32  32  12  10  12  12 254 254 254 254 254 254 254 254
     6:  32  32  32  32  12  12  10  12 254 254 254 254 254 254 254 254
     7:  32  32  32  32  12  12  12  10 254 254 254 254 254 254 254 254
     8: 254 254 254 254 254 254 254 254  10  12  12  12  32  32  32  32
     9: 254 254 254 254 254 254 254 254  12  10  12  12  32  32  32  32
    10: 254 254 254 254 254 254 254 254  12  12  10  12  32  32  32  32
    11: 254 254 254 254 254 254 254 254  12  12  12  10  32  32  32  32
    12: 254 254 254 254 254 254 254 254  32  32  32  32  10  12  12  12
    13: 254 254 254 254 254 254 254 254  32  32  32  32  12  10  12  12
    14: 254 254 254 254 254 254 254 254  32  32  32  32  12  12  10  12
    15: 254 254 254 254 254 254 254 254  32  32  32  32  12  12  12  10

  From /proc/meminfo
     MemTotal:       951029164 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"
```


(Continued on next page)

Platform Notes (Continued)

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

  uname -a:
     Linux 13d 4.12.14-197.21.1.vSMP.2-default #1 SMP Mon Oct 7 08:41:58 EDT 2019 (8ef2efd)
     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: usercopy/swapgs barriers and __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 9 23:26

  SPEC is set to: /dev/shm
     Filesystem     Type   Size  Used Avail Use% Mounted on
     ramfs          ramfs     0     0     0    - /dev/shm

  From /sys/devices/virtual/dmi/id
      BIOS:    ScaleMP 9.5.195.12 11/26/2019
      Vendor:  ScaleMP
      Product: vSMP Foundation
      Serial:  1122334

  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:
      16x Micron Technology 36ASF4G72PZ-2G6E1 32 kB 2 rank 2667
      16x SK Hynix HMA84GR7AFR4N-VK 32 kB 2 rank 2667

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C               | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
C++             | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
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: /mnt/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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
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: /mnt/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
```

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Compiler Version Notes (Continued)

```
InstalledDir: /mnt/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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
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: /mnt/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: /mnt/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`

(Continued on next page)

Base Compiler Invocation (Continued)

Benchmarks using both C and C++:
clang++ clang

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

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_CASE_FLAG -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 -lamdlibm -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

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Base Optimization Flags (Continued)

C++ benchmarks (continued):
-mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC
-mllvm -unroll-threshold=100 -flv-function-specialization
-mllvm -enable-partial-unswitch -z muldefs -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 -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 -lmvec -lamdlibm -ljemalloc -lflang

Benchmarks using both 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 -z muldefs
-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

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Base Optimization Flags (Continued)

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

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/aocc200-flags-B1.html`
`http://www.spec.org/cpu2017/flags/ScaleMP-Supermicro-Platform-Settings-V1.2-Rome-revA.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/aocc200-flags-B1.xml`
`http://www.spec.org/cpu2017/flags/ScaleMP-Supermicro-Platform-Settings-V1.2-Rome-revA.xml`

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

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