SPEC CPU®2017 Floating Point Rate Result

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Supermicro
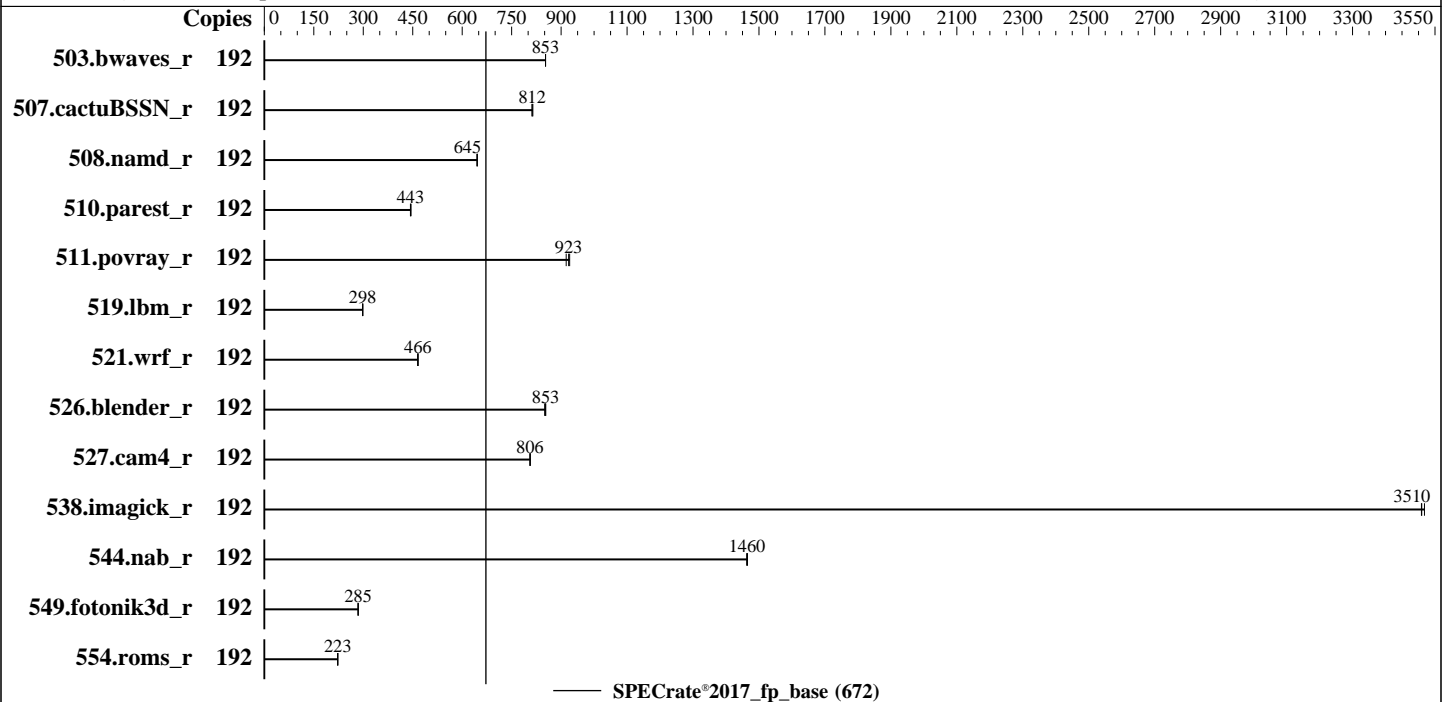
A+ Server 2115GT-HNTR
(H13SST-G , AMD EPYC 9654)

$SPECrate^{®}2017_fp_base = $ 672

$SPECrate^{®}2017_fp_peak = $ Not Run

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Benchmark	Copies	Result
503.bwaves_r	192	853
507.cactuBSSN_r	192	812
508.namd_r	192	645
510.parest_r	192	443
511.povray_r	192	923
519.lbm_r	192	298
521.wrf_r	192	466
526.blender_r	192	853
527.cam4_r	192	806
538.imagick_r	192	3510
544.nab_r	192	1460
549.fotonik3d_r	192	285
554.roms_r	192	223

SPECrate®2017_fp_base (672)

Hardware

CPU Name: AMD EPYC 9654
 Max MHz: 3700
 Nominal: 2400
Enabled: 96 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 384 MB I+D on chip per chip, 32 MB shared / 8 cores
 Other: None
Memory: 1536 GB (12 x 128 GB 2S2Rx4 PC5-4800B-R)
Storage: 1 x 2 TB SATA III SSD
Other: None

Software

OS: Ubuntu 22.04 LTS
 Kernel 5.15.0-47-generic
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version T20220930143424 released Sep-2022
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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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	192	2258	853	**2258**	**853**	2258	853							
507.cactuBSSN_r	192	299	814	299	812	**299**	**812**							
508.namd_r	192	282	646	**283**	**645**	283	645							
510.parest_r	192	**1133**	**443**	1134	443	1129	445							
511.povray_r	192	490	915	484	926	**486**	**923**							
519.lbm_r	192	679	298	678	299	**678**	**298**							
521.wrf_r	192	922	466	925	465	**923**	**466**							
526.blender_r	192	343	853	**343**	**853**	344	850							
527.cam4_r	192	416	807	417	806	**417**	**806**							
538.imagick_r	192	136	3520	136	3510	**136**	**3510**							
544.nab_r	192	221	1470	221	1460	**221**	**1460**							
549.fotonik3d_r	192	2630	284	**2630**	**285**	2629	285							
554.roms_r	192	1373	222	**1370**	**223**	1369	223							
SPECrate®2017_fp_base =				**672**										
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/

This result used a pre-release AOCC 4.0.0 compiler tuning option "zopt=1".  Customers should use
the simpler spelling "zopt" to achieve equivalent effect with a production AOCC 4.0.0 compiler.
```

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 limit
'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>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
```

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Operating System Notes (Continued)

```
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/cpu2017/amd_rate_aocc400_genoa_A_lib/lib:/home/cpu2017/amd_rate_a
     occ400_genoa_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 9654 CPU + 1.5TiB Memory using SLE 15 SP4

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.
```

Platform Notes

```
BIOS Settings:
Determinism Control = Manual
Determinism Enable = Disable Performance Determinism
cTDP Control = Manual
cTDP = 400
Package Power Limit Control = Manual
Package Power Limit = 400
NUMA Nodes Per Socket = NPS4

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
```

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Platform Notes (Continued)

```
running on h13sst-9654 Tue Oct 11 05:56:52 2022

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 9654 96-Core Processor
      1  "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 : 96
      siblings  : 192
      physical 0: cores 0 1 2 3 4 5 6 7 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 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81
      82 83 84 85 86 87 88 89 90 91 92 93 94 95

From lscpu from util-linux 2.37.2:
   Architecture:                x86_64
   CPU op-mode(s):              32-bit, 64-bit
   Address sizes:               52 bits physical, 57 bits virtual
   Byte Order:                  Little Endian
   CPU(s):                      192
   On-line CPU(s) list:         0-191
   Vendor ID:                   AuthenticAMD
   Model name:                  AMD EPYC 9654 96-Core Processor
   CPU family:                  25
   Model:                       17
   Thread(s) per core:          2
   Core(s) per socket:          96
   Socket(s):                   1
   Stepping:                    1
   Frequency boost:             enabled
   CPU max MHz:                 3709.0000
   CPU min MHz:                 400.0000
   BogoMIPS:                    4800.06
   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 rapl pni pclmulqdq monitor ssse3 fma cx16 pcid 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 perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs
   ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f
   avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw
```

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Platform Notes (Continued)

```
     avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
     cqm_mbm_local avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin cppc arat
     npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
     pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi umip pku
     ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq
     la57 rdpid overflow_recov succor smca fsrm flush_l1d
   Virtualization:              AMD-V
   L1d cache:                   3 MiB (96 instances)
   L1i cache:                   3 MiB (96 instances)
   L2 cache:                    96 MiB (96 instances)
   L3 cache:                    384 MiB (12 instances)
   NUMA node(s):                4
   NUMA node0 CPU(s):           0-23,96-119
   NUMA node1 CPU(s):           24-47,120-143
   NUMA node2 CPU(s):           48-71,144-167
   NUMA node3 CPU(s):           72-95,168-191
   Vulnerability Itlb multihit:   Not affected
   Vulnerability L1tf:            Not affected
   Vulnerability Mds:             Not affected
   Vulnerability Meltdown:        Not affected
   Vulnerability Mmio stale data: Not affected
   Vulnerability Retbleed:        Not affected
   Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
   prctl and seccomp
   Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user
   pointer sanitization
   Vulnerability Spectre v2:        Mitigation; Retpolines, IBPB conditional, IBRS_FW,
   STIBP always-on, RSB filling
   Vulnerability Srbds:           Not affected
   Vulnerability Tsx async abort:   Not affected

 From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL  SETS PHY-LINE COHERENCY-SIZE
     L1d      32K       3M    8 Data            1    64       1              64
     L1i      32K       3M    8 Instruction     1    64       1              64
     L2        1M      96M    8 Unified         2  2048       1              64
     L3       32M     384M   16 Unified         3 32768       1              64

 /proc/cpuinfo cache data
    cache size : 1024 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 4 nodes (0-3)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 96 97 98 99
   100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119
   node 0 size: 386787 MB
```

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Platform Notes (Continued)

```
    node 0 free: 384590 MB
    node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
    120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141
    142 143
    node 1 size: 387005 MB
    node 1 free: 384646 MB
    node 2 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71
    144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165
    166 167
    node 2 size: 387021 MB
    node 2 free: 385134 MB
    node 3 cpus: 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
    168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189
    190 191
    node 3 size: 387056 MB
    node 3 free: 385157 MB
    node distances:
    node   0   1   2   3
      0:  10  12  12  12
      1:  12  10  12  12
      2:  12  12  10  12
      3:  12  12  12  10

  From /proc/meminfo
    MemTotal:       1585019852 kB
    HugePages_Total:         0
    Hugepagesize:         2048 kB

  /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
    performance

  /usr/bin/lsb_release -d
    Ubuntu 22.04 LTS

  From /etc/*release* /etc/*version*
    debian_version: bookworm/sid
    os-release:
      PRETTY_NAME="Ubuntu 22.04 LTS"
      NAME="Ubuntu"
      VERSION_ID="22.04"
      VERSION="22.04 (Jammy Jellyfish)"
      VERSION_CODENAME=jammy
      ID=ubuntu
      ID_LIKE=debian
      HOME_URL="https://www.ubuntu.com/"

  uname -a:
```

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Platform Notes (Continued)

```
   Linux h13sst-9654 5.15.0-47-generic #51-Ubuntu SMP Thu Aug 11 07:51:15 UTC 2022 x86_64
   x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2018-12207 (iTLB Multihit):                    Not affected
 CVE-2018-3620 (L1 Terminal Fault):                 Not affected
 Microarchitectural Data Sampling:                  Not affected
 CVE-2017-5754 (Meltdown):                          Not affected
 mmio_stale_data:                                   Not affected
 retbleed:                                          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: Retpolines, IBPB:
                                                    conditional, IBRS_FW, STIBP:
                                                    always-on, RSB filling
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
 CVE-2019-11135 (TSX Asynchronous Abort):           Not affected

 run-level 3 Oct 11 02:45

 SPEC is set to: /home/cpu2017
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext4  1.8T   20G  1.7T   2% /

 From /sys/devices/virtual/dmi/id
    Vendor:          Supermicro
    Product:         Super Server
    Product Family:  Family
    Serial:          0123456789

 Additional information from dmidecode 3.3 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:
     12x Samsung M321RAGA0B20-CWKZH 128 GB 2 rank 4800

 BIOS:
    BIOS Vendor:       American Megatrends International, LLC.
    BIOS Version:      T20220930143424
    BIOS Date:         09/30/2022
    BIOS Revision:     5.27
```

(Continued on next page)

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Platform Notes (Continued)

```
  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C                    | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
------------------------------------------------------------------------------


==============================================================================
C++                  | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
------------------------------------------------------------------------------


==============================================================================
C++, C               | 511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
```

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Compiler Version Notes (Continued)

```
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
--------------------------------------------------------------------------


==========================================================================
Fortran        | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
--------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
--------------------------------------------------------------------------


==========================================================================
Fortran, C     | 521.wrf_r(base) 527.cam4_r(base)
--------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#294 2022_09_06) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-294/bin
--------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

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Base Compiler Invocation (Continued)

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
```

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 -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:
```
-m64 -Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt=1 -z muldefs -lamdlibm -lamdalloc -lflang
```

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Base Optimization Flags (Continued)

C++ benchmarks:
```
-m64 -Wl,-mllvm -Wl,-x86-use-vzeroupper=false -flto
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt=1 -z muldefs -lamdlibm
-lamdalloc -lflang
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-enable-X86-prefetching -flto
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -Kieee -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt=1 -z muldefs -lamdlibm
-lamdalloc -lflang
```

Benchmarks using both Fortran and C:
```
-m64 -Wl,-mllvm -Wl,-enable-X86-prefetching -flto
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt=1 -Kieee -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -z muldefs -lamdlibm -lamdalloc
-lflang
```

Benchmarks using both C and C++:
```
-m64 -Wl,-mllvm -Wl,-x86-use-vzeroupper=false -flto
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt=1 -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -z muldefs -lamdlibm -lamdalloc
-lflang
```

Benchmarks using Fortran, C, and C++:
```
-m64 -Wl,-mllvm -Wl,-x86-use-vzeroupper=false -flto
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
```

(Continued on next page)

Supermicro

A+ Server 2115GT-HNTR
(H13SST-G , AMD EPYC 9654)

SPECrate®2017_fp_base =   672

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
```
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt=1 -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -Kieee -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -z muldefs -lamdlibm -lamdalloc
-lflang
```

Base Other Flags

C benchmarks:
```
-Wno-unused-command-line-argument
```

C++ benchmarks:
```
-Wno-unused-command-line-argument
```

Fortran benchmarks:
```
-Wno-unused-command-line-argument
```

Benchmarks using both Fortran and C:
```
-Wno-unused-command-line-argument
```

Benchmarks using both C and C++:
```
-Wno-unused-command-line-argument
```

Benchmarks using Fortran, C, and C++:
```
-Wno-unused-command-line-argument
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/aocc400-flags.2022-11-10.html
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Genoa-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc400-flags.2022-11-10.xml
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Genoa-revB.xml

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

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