## SPEC CPU®2017 Floating Point Speed Result

**Supermicro**

A+ SuperWorkstation 5014A-TT  
(M12SWA-TF, AMD Ryzen Threadripper PRO 3945WX)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 71.6</th>
<th>SPECspeed®2017_fp_peak = 74.1</th>
</tr>
</thead>
</table>

**CPU2017 License:** 001176  
**Test Date:** Feb-2021

**Test Sponsor:** Supermicro  
**Hardware Availability:** Mar-2021

**Tested by:** Supermicro  
**Software Availability:** Jan-2021

### Threads

<table>
<thead>
<tr>
<th>Test</th>
<th>Threads</th>
<th>SPECspeed®2017_fp_peak</th>
<th>SPECspeed®2017_fp_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>12</td>
<td>114</td>
<td>116</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>12</td>
<td>22.1</td>
<td>16</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>24</td>
<td>92.5</td>
<td></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>24</td>
<td>97.0</td>
<td></td>
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<tr>
<td>627.cam4_s</td>
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<td>638.imagick_s</td>
<td>12</td>
<td>76.3</td>
<td></td>
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<td>644.nab_s</td>
<td>24</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>12</td>
<td>46.5</td>
<td></td>
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<td>654.roms_s</td>
<td>12</td>
<td>72.1</td>
<td>74.0</td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** AMD Ryzen Threadripper PRO 3945WX  
**Max MHz:** 4300  
**Nominal:** 4000

**Enabled:** 12 cores, 1 chip, 2 threads/core  
**Orderable:** 1 chip

**Cache L1:** 32 KB I + 32 KB D on chip per core  
**L2:** 512 KB I+D on chip per core  
**L3:** 64 MB I+D on chip per core, 16 MB shared / 3 cores

**Memory:** 512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R)  
**Storage:** 1 x 300 GB SATA III, 7200 RPM

### Software

**OS:** Ubuntu 20.04.1 LTS  
**Kernel:** 5.4.0-60-generic

**Compiler:** C/C++/Fortran: Version 2.0.0 of AOCC  
**Parallel:** Yes

**Firmware:** Version 5.17 released Feb-2021  
**File System:** ext4

**System State:** Run level 5 (multi-user without GUI)  
**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.
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(M12SWA-TF, AMD Ryzen Threadripper PRO 3945WX)

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**SPECspeed®2017_fp_base = 71.6**

**SPECspeed®2017_fp_peak = 74.1**

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
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<td>621.wrf_s</td>
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<td>92.6</td>
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<td>91.9</td>
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<td>215</td>
<td>73.3</td>
<td>212</td>
<td>74.2</td>
<td>213</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_fp_base = 71.6**

**SPECspeed®2017_fp_peak = 74.1**

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)
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(M12SWA-TF, AMD Ryzen Threadripper PRO 3945WX)

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-23"
LD_LIBRARY_PATH = 
    "/home/cpu2017/amd_speed_aocc200_rome_C_lib/64;/home/cpu2017/amd_speed_aocc200_rome_C_lib/32:"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "24"

Environment variables set by runcpu during the 607.cactuBSSN_s peak run:
GOMP_CPU_AFFINITY = "0-11"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0 12 1 13 2 14 3 15 4 16 5 17 6 18 7 19 8 20 9 21 10 22 11 23"

Environment variables set by runcpu during the 621.wrf_s peak run:
GOMP_CPU_AFFINITY = "0 12 1 13 2 14 3 15 4 16 5 17 6 18 7 19 8 20 9 21 10 22 11 23"

Environment variables set by runcpu during the 628.pop2_s peak run:
GOMP_CPU_AFFINITY = "0-11"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 12 1 13 2 14 3 15 4 16 5 17 6 18 7 19 8 20 9 21 10 22 11 23"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-11"

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:
**General Notes (Continued)**

https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2

---

**Platform Notes**

BIOS Settings:
Determinism Control = Manual
Determinism Slider = Power
APBDIS = 1
NUMA Nodes Per Socket = NPS2

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on m12swa-01 Sat Feb 20 03:39:41 2021

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 Ryzen Threadripper PRO 3945WX 12-Cores
- 1 "physical id"s (chips)
- 24 "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: 12
- siblings: 24
- physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14

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): 24
- On-line CPU(s) list: 0-23
- Thread(s) per core: 2
- Core(s) per socket: 12
- Socket(s): 1
- NUMA node(s): 2
- Vendor ID: AuthenticAMD
- CPU family: 49
- Model: AMD Ryzen Threadripper PRO 3945WX 12-Cores
- Stepping: 0
- Frequency boost: enabled

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SPECspeed®2017_fp_base = 71.6
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Platform Notes (Continued)

CPU MHz: 3601.956
CPU max MHz: 4000.0000
CPU min MHz: 2200.0000
BogoMIPS: 7999.97
Virtualization: AMD-V
L1d cache: 384 KiB
L1i cache: 384 KiB
L2 cache: 6 MiB
L3 cache: 64 MiB
NUMA node0 CPU(s): 0-5,12-17
NUMA node1 CPU(s): 6-11,18-23
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: 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; Full AMD retpoline, IBPB conditional, STIBP conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected
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 rdscv1 lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osuw ibs skinit wdt tce topoext perfctr_core perfctr_nb bptext perfctr_l1l mwaitx cbp cat_13 cd_p state sme ssbd mba sev ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 cmqm rdt_a rdsseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves cmqm_llc cmq_occup_llc cmq_mbm_total cmq_mbm_local clzero irperfx xsaveerptr wbinvd arat npt lbv svm_lock nrip_save tsc_scale vmbc_clean flushbyasid decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgft 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: 2 nodes (0-1)
  node 0 cpus: 0 1 2 3 4 5 12 13 14 15 16 17
  node 0 size: 257900 MB
  node 0 free: 257299 MB
  node 1 cpus: 6 7 8 9 10 11 18 19 20 21 22 23
  node 1 size: 257996 MB

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SPECspeed®2017_fp_base = 71.6
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Platform Notes (Continued)

node 1 free: 257406 MB
node distances:
node  0  1
  0: 10 12
  1: 12 10

From /proc/meminfo
  MemTotal:         528277988 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

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

/usr/bin/lsb_release -d
  Ubuntu 20.04.1 LTS

From /etc/*release* /etc/*version*
  debian_version: bullseye/sid
  os-release:  
    NAME="Ubuntu"
    VERSION="20.04.1 LTS (Focal Fossa)"
    ID=ubuntu
    ID_LIKE=debian
    PRETTY_NAME="Ubuntu 20.04.1 LTS"
    VERSION_ID="20.04"
    HOME_URL="https://www.ubuntu.com/"
    SUPPORT_URL="https://help.ubuntu.com/"

uname -a:
  Linux m12swa-01 5.4.0-60-generic #67-Ubuntu SMP Tue Jan 5 18:31:36 UTC 2021 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
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, STIBP:

(Continued on next page)
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Tested by: Supermicro

Platform Notes (Continued)
conditional, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Feb 19 15:57
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 ext4 272G 24G 234G 10% /

From /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: M12SWA-TF
Product Family: SMC M12
Serial: 123456789

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:
8x SK Hynix HMAA8GR7A8JR4N-XN 64 GB 2 rank 3200

BIOS:
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 5.17
BIOS Date: 02/01/2021
BIOS Revision: 5.17

(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)

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Compiler Version Notes (Continued)

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

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

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Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
| 654.roms_s(base, peak)
==============================================================================
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
Fortran, C      | 621.wrf_s(base, peak) 627.cam4_s(base, peak)
| 628.pop2_s(base, peak)
==============================================================================
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

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
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Test Sponsor: Supermicro
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Test Date: Feb-2021
Hardware Availability: Mar-2021
Software Availability: Jan-2021

Base Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

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

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-ffast-math
-march=znver2 -fstruct-layout=3 -ml1vm -unroll-threshold=50
-ftree-vectorize -mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
-ftree-vectorize -mllvm -function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-llflang

Fortran benchmarks:
-ffast-math
-march=znver2 -fstruct-layout=3 -ml1vm -unroll-threshold=50
-ftree-vectorize -mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
-ftree-vectorize -mllvm -function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-llflang

(Continued on next page)
### Base Optimization Flags (Continued)

Fortran benchmarks (continued):
- `-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 -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 -fopenmp=libomp`
- `-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

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

(Continued on next page)
Supermicro
A+ SuperWorkstation 5014A-TT
(M12SWA-TF, AMD Ryzen Threadripper PRO 3945WX)  

SPECspeed®2017_fp_base = 71.6
SPECspeed®2017_fp_peak = 74.1

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<th>Test Date: Feb-2021</th>
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</tr>
<tr>
<td>Tested by: Supermicro</td>
<td>Software Availability: Jan-2021</td>
</tr>
</tbody>
</table>

Base Other Flags (Continued)

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

Peak Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619_lbm_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-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
-liemc -landlibm -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc -lflang

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

Supermicro

A+ SuperWorkstation 5014A-TT
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| SPECspeed®2017_fp_base | 71.6 |
| SPECspeed®2017_fp_peak  | 74.1 |

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Peak Optimization Flags (Continued)

638.imagick_s: basepeak = yes

644.nab_s: Same as 619.lbm_s

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

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

Benchmarks using both Fortran and C:

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

627.cam4_s: basepeak = yes

628.pop2_s: Same as 621.wrf_s

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 -Ofast -march=znver2

(Continued on next page)
Supermicro
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SPECspeed®2017_fp_base = 71.6
SPECspeed®2017_fp_peak = 74.1

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Hardware Availability: Mar-2021
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Peak Optimization Flags (Continued)

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

-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
-fly-function-specialization -mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch -mllvm -loop-unswitch-threshold=200000
-O3 -funroll-loops -Mrecursive -Kieee -fno-finite-math-only
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lpthread -ldl -lmvec
-lamdlIBM -ljemalloc -lflang

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

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

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