**SPEC CPU®2017 Floating Point Speed Result**

**Supermicro**

A+ Server 1114S-WTRT  
(H12SSW-NT, AMD EPYC 7313P)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>74.1</th>
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<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>76.1</td>
</tr>
</tbody>
</table>

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

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

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

### Hardware

<table>
<thead>
<tr>
<th>Thread</th>
<th>Spec Speed2017_fp_base</th>
<th>Spec Speed2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>16</td>
<td>139</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>16</td>
<td>185</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>16</td>
<td>26.9</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>16</td>
<td>27.1</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>16</td>
<td>54.6</td>
</tr>
<tr>
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</tr>
<tr>
<td>638.imagick_s</td>
<td>16</td>
<td>99.5</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>16</td>
<td>144</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>16</td>
<td>183</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>16</td>
<td>61.8</td>
</tr>
</tbody>
</table>

### Software

**CPU Name:** AMD EPYC 7313P  
**OS:** Ubuntu 20.04.3 LTS

**Max MHz:** 3700  
**Kernel:** 5.4.0-86-generic

**Nominal:** 3000  
**Compiler:** C/C++/Fortran: Version 3.0.0 of AOCC

**Enabled:** 16 cores, 1 chip, 2 threads/core  
**Parallel:** Yes

**Orderable:** 1 chip  
**Firmware:** Version 2.0 released Feb-2021

**Cache L1:** 32 KB I + 32 KB D on chip per core  
**File System:** ext4

**L2:** 512 KB I+D on chip per core  
**System State:** Run level 3 (multi-user)

**L3:** 128 MB I+D on chip per chip, 32 MB shared / 4 cores  
**Base Pointers:** 64-bit

**Other:** None  
**Peak Pointers:** 64-bit

**Memory:** 128 GB (4 x 32 GB 2Rx4 PC4-3200AA-R)  
**Other:** jemalloc: jemalloc memory allocator library v5.1.0

**Storage:** 1 x 200 GB SATA III SSD  
**Power Management:** BIOS set to prefer performance at the cost of additional power usage.
**Supermicro**

**A+ Server 1114S-WTRT**  
(H12SSW-NT, AMD EPYC 7313P)

---

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>BASE Seconds</th>
<th>Ratio</th>
<th>BASE Seconds</th>
<th>Ratio</th>
<th>BASE Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
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<td><strong>107</strong></td>
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<td><strong>90.2</strong></td>
<td><strong>147</strong></td>
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<td><strong>54.7</strong></td>
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<td><strong>54.7</strong></td>
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</tbody>
</table>

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**Compiler Notes**

The AMD64 AOCC Compiler Suite is available at  
http://developer.amd.com/amd-aocc/

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**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.  
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,

(Continued on next page)
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(H12SSW-NT, AMD EPYC 7313P)

SPECspeed®2017_fp_peak = 76.1
SPECspeed®2017_fp_base = 74.1

Operating System Notes (Continued)

'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
To enable THP only on request for peak runs of 628.pop2_s, and 638.imagick_s,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To disable THP for peak runs of 627.cam4_s, 644.nab_s, 649.fotonik3d_s, and 654.roms_s,
'echo never > /sys/kernel/mm/transparent_hugepage/enabled' run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-31"
LD_LIBRARY_PATH =
    "/home/cpu2017/amd_speed_aocc300_milan_B_lib/lib;/home/cpu2017/amd_speed
    _aocc300_milan_B_lib/lib32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "32"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 628.pop2_s peak run:
GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 16 1 17 2 18 3 19 4 20 5 21 6 22 7 23 8 24 9 25 10 26
11 27 12 28 13 29 14 30 15 31"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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 v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
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A+ Server 1114S-WTRT
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<td>74.1</td>
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**Platform Notes**

- **BIOS Settings:**
  - Determinism Control = Manual
  - Determinism Slider = Power
  - cTDP Control = Manual
  - cTDP = 180
  - Package Power Limit Control = Manual
  - Package Power Limit = 180
  - APBDIS = 1

- **NUMA Nodes Per Socket = NPS4**

- **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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

- **From /proc/cpuinfo**
  - model name: AMD EPYC 7313P 16-Core Processor
  - 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: 16
    - siblings: 32
    - physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

- **From lscpu from util-linux 2.34:**
  - Architecture: x86_64
  - CPU op-mode(s): 32-bit, 64-bit
  - Byte Order: Little Endian
  - Address sizes: 48 bits physical, 48 bits virtual
  - CPU(s): 32
  - On-line CPU(s) list: 0-31
  - Thread(s) per core: 2
  - Core(s) per socket: 16
  - Socket(s): 1
  - NUMA node(s): 4
  - Vendor ID: AuthenticAMD
  - CPU family: 25
  - Model: 1
  - Model name: AMD EPYC 7313P 16-Core Processor
  - Stepping: 1
  - Frequency boost: enabled
  - CPU MHz: 3560.788
  - CPU max MHz: 3000.000

(Continued on next page)
Supermicro  
A+ Server 1114S-WTRT  
(H12SSW-NT, AMD EPYC 7313P)  

SPEC®2017 fp_base = 74.1  
SPEC®2017 fp_peak = 76.1

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

Test Date: Sep-2021  
Hardware Availability: Mar-2021  
Software Availability: Sep-2021

Platform Notes (Continued)

CPU min MHz: 1500.0000  
BogoMIPS: 5999.40  
Virtualization: AMD-V  
L1d cache: 512 KiB  
L1i cache: 512 KiB  
L2 cache: 8 MiB  
L3 cache: 128 MiB  
NUMA node0 CPU(s): 0-3,16-19  
NUMA node1 CPU(s): 4-7,20-23  
NUMA node2 CPU(s): 8-11,24-27  
NUMA node3 CPU(s): 12-15,28-31  
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 sanitation  
Vulnerability Spectre v2: Mitigation; Full AMD retpoline, IBPF conditional, IBRS_FW, STIBF always-on, 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 rdscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 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 bext perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmcvtall fsgsbases bmi1 avx2 smep bmi2 brms invpcid cqm rdt_a rdsed adx map clflushopt clwb sha 나는 xsaveopt xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local clzero irperf xsaveerpr wbnoinvd arat npt lbrv svm_lock nrip_save tsc_scale vmc_bb clean flushbyasis decodeassist ps savefilter pfthreshold v_msave_vmload vgifs umip pku ospke vaes vpclmulqdq rdpid overflow_recover succor smca

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL
L1d 32K 512K 8 Data 1
L1i 32K 512K 8 Instruction 1
L2 512K 8M 8 Unified 2
L3 32M 128M 16 Unified 3

From numactl --hardware
//proc/cpuinfo cache data
cache size : 512 KB

(Continued on next page)
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(H12SSW-NT, AMD EPYC 7313P)

SPECspeed®2017_fp_base = 74.1
SPECspeed®2017_fp_peak = 76.1

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

Test Date: Sep-2021
Hardware Availability: Mar-2021
Software Availability: Sep-2021

Platform Notes (Continued)

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 16 17 18 19
node 0 size: 0 MB
node 0 free: 0 MB
node 1 cpus: 4 5 6 7 20 21 22 23
node 1 size: 64388 MB
node 1 free: 63619 MB
node 2 cpus: 8 9 10 11 24 25 26 27
node 2 size: 64468 MB
node 2 free: 64201 MB
node 3 cpus: 12 13 14 15 28 29 30 31
node 3 size: 0 MB
node 3 free: 0 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: 131950540 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

/usr/bin/lsb_release -d
Ubuntu 20.04.3 LTS

From /etc/*release* /etc/*version*
debian_version: bullseye/sid
os-release:
NAME="Ubuntu"
VERSION="20.04.3 LTS (Focal Fossa)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 20.04.3 LTS"
VERSION_ID="20.04"
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"

uname -a:
Linux h12ssw-7313p 5.4.0-86-generic #97-Ubuntu SMP Fri Sep 17 19:19:40 UTC 2021 x86_64
x86_64 x86_64 GNU/Linux

(Continued on next page)
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A+ Server 1114S-WTRT
(H12SSW-NT, AMD EPYC 7313P)

SPECspeed®2017_fp_base = 74.1
SPECspeed®2017_fp_peak = 76.1

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Sep-2021
Tested by: Supermicro
Hardware Availability: Mar-2021
Software Availability: Sep-2021

Platform Notes (Continued)

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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Sep 24 15:40
SPEC is set to: /home/cpu2017
Files /dev/sda2 ext4 183G 22G 152G 13% /

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

Additional information from dmidecode 3.2 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:
4x NO DIMM Unknown
4x SK Hynix HMA84GR7DJR4N-XN 32 GB 2 rank 3200

BIOS:
BIOS Vendor: American Megatrends Inc.
BIOS Version: 2.0
BIOS Date: 02/22/2021
BIOS Revision: 5.22

(End of data from sysinfo program)
Supermicro
A+ Server 1114S-WTRT
(H12SSW-NT, AMD EPYC 7313P)

SPEC®2017_fp_base = 74.1
SPEC®2017_fp_peak = 76.1

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

---

Compiler Version Notes

```
C          | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
```

```
C++, C, Fortran | 607.cactuBSSN_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
```

```
Fortran      | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
```

```
Fortran, C   | 621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
```

(Continued on next page)
Supermicro
A+ Server 1114S-WTRT
(H12SSW-NT, AMD EPYC 7313P)

SPECspeed®2017_fp_base = 74.1
SPECspeed®2017_fp_peak = 76.1

Compiler Version Notes (Continued)

LLVM Mirror.Version.12.0.0
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on
LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/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
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
Supermicro
A+ Server 1114S-WTRT
(H12SSW-NT, AMD EPYC 7313P)

SPECspeed®2017_fp_base = 74.1
SPECspeed®2017_fp_peak = 76.1

C benchmarks:
- m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- fvecclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
- fremap-arrays -mllvm -function-specialize -flv-function-specialization
- mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
- mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
- lflang -lflangrti

Fortran benchmarks:
- m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
- Wl,-mllvm -Wl,-enable-licm-vrp -Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mllvm -Wl,-reduce-array-computations=3 -Hz,1,0x1 -O3
- march=znver3 -fvecclib=AMDLIBM -ffast-math -Mrecursive
- mllvm -fuse-tile-inner-loop -funroll-loops
- mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop
- mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp
- fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti

Benchmarks using both Fortran and C:
- m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
- Wl,-mllvm -Wl,-enable-licm-vrp -Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- fvecclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
- fremap-arrays -mllvm -function-specialize -flv-function-specialization
- mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
- mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -Hz,1,0x1
- Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops
- mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop -z muldefs
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
- lflang -lflangrti

Benchmarks using Fortran, C, and C++:
- m64 -mno-adx -mno-sse4a -std=c++98
- Wl,-mllvm -Wl,-x86-use-vzeroupper=false
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize

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

Supermicro
A+ Server 1114S-WTRT
(H12SSW-NT, AMD EPYC 7313P)

SPECspeed®2017_fp_base = 74.1
SPECspeed®2017_fp_peak = 76.1

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

Test Date: Sep-2021
Hardware Availability: Mar-2021
Software Availability: Sep-2021

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
-W1,-mllvm -Wl,-align-all-nofallthru-blocks=6
-W1,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3
-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -loop-unswitch-threshold=200000
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -extra-vectorizer-passes -mllvm -convert-pow-exp-to-int=false
-Hz,1,0x1 -Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti

Base Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

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

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

Peak Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

(Continued on next page)
Peak Compiler Invocation (Continued)

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: -m64 -mno-adx -mno-sse4a
-Wl,-ml1vm -Wl,-function-specialize
-Wl,-ml1vm -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml1vm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -ml1vm -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-ml1vm -inline-threshold=1000 -ml1vm -enable-gvn-hoist
-ml1vm -global-vectorize-slp=true
-ml1vm -function-specialize -ml1vm -enable-licm-vrp
-ml1vm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

638.imagick_s: basepeak = yes

644.nab_s: -m64 -mno-adx -mno-sse4a -Wl,-ml1vm -Wl,-region-vectorize
-Wl,-ml1vm -Wl,-function-specialize -Ofast -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-ml1vm -unroll-threshold=50 -fremap-arrays
-ml1vm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-ml1vm -function-specialize -ml1vm -enable-licm-vrp
-ml1vm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

(Continued on next page)
Peak Optimization Flags (Continued)

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

627.cam4_s: basepeak = yes

628.pop2_s: -m64 -mno-adx -mno-sse4a
   -Wl,-mllvm -Wl,-enable-X86-prefetching
   -Wl,-mllvm -Wl,-enable-licm-vrp
   -Wl,-mllvm -Wl,-function-specialize
   -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
   -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
   -march=znver3 -ffast-math -flto
   -fstruct-layout=5 -mllvm -unroll-threshold=50
   -fremap-arrays -flv-function-specialization
   -mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
   -mllvm -global-vectorize-slp=true
   -mllvm -function-specialize -mllvm -enable-licm-vrp
   -mllvm -reduce-array-computations=3 -Mrecursive
   -DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
   -ljemalloc -lflang

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

Peak Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

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

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument -Wno-return-type
### SPEC CPU®2017 Floating Point Speed Result

**Supermicro**

A+ Server 1114S-WTRT  
(H12SSW-NT, AMD EPYC 7313P)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_peak</th>
<th>76.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_base</td>
<td>74.1</td>
</tr>
</tbody>
</table>

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

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

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

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:


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