# SPEC CPU®2017 Integer Speed Result

Supermicro

A+ SuperWorkstation 5014A-TT
(M12SWA-TF, AMD Ryzen Threadripper PRO 3975WX)

**SPECspeed®2017_int_base** = 11.0

**SPECspeed®2017_int_peak** = 11.5

<table>
<thead>
<tr>
<th>Threaded Test</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>5.87</td>
<td>11.9</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>6.59</td>
<td>18.8</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>6.05</td>
<td>20.4</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>6.14</td>
<td>20.4</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>6.18</td>
<td>20.6</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>6.45</td>
<td>21.4</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.49</td>
<td>25.0</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>5.49</td>
<td>25.1</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** AMD Ryzen Threadripper PRO 3975WX
- **Max MHz:** 4200
- **Nominal:** 3500
- **Enabled:** 32 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:** 128 MB I+D on chip per core, 16 MB shared / 4 cores
- **Other:** None
- **Memory:** 512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 300 GB SATA III, 7200 RPM
- **Other:** None

**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 Jan-2021
- **File System:** ext4
- **System State:** Run level 5 (multi-user without GUI)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-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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SPECspeed®2017_int_base = 11.0  
SPECspeed®2017_int_peak = 11.5

---

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>600.perlbench_s</td>
<td>32</td>
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<td>25.1</td>
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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.

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**Operating System Notes**

'ulimit -s unlimited' was used to set environment stack size  
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <etc>

Set dirty_ratio=8 to limit dirty cache to 8% of memory  
Set swappiness=1 to swap only if necessary  
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory sync then drop_caches=3 to reset caches before invoking runcpu

dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).  
Transparent huge pages set to 'always' for this run (OS default)
Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-63"
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 = "64"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"
OMP_STACKSIZE = "128M"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 648.exchange2_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-31"

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.

(Continued on next page)
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SPECspeed®2017_int_base = 11.0
SPECspeed®2017_int_peak = 11.5

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date</th>
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<tbody>
<tr>
<td>001176</td>
<td>Jan-2021</td>
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<table>
<thead>
<tr>
<th>Test Sponsor</th>
<th>Hardware Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supermicro</td>
<td>Mar-2021</td>
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<th>Software Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supermicro</td>
<td>Jan-2021</td>
</tr>
</tbody>
</table>

General Notes (Continued)

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:
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 = NPS4

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on ubuntu-01 Sat Jan 30 05:48:46 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 3975WX 32-Cores
1 "physical id"s (chips)
64 "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 : 32
siblings : 64
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

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): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 32

(Continued on next page)
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SPECspeed®2017_int_base = 11.0
SPECspeed®2017_int_peak = 11.5

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

Platform Notes (Continued)

Socket(s): 1
NUMA node(s): 4
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD Ryzen Threadripper PRO 3975WX 32-Cores
Stepping: 0
Frequency boost: enabled
CPU MHz: 3777.581
CPU max MHz: 3500.0000
CPU min MHz: 2200.0000
BogoMIPS: 6999.76
Virtualization: AMD-V
L1d cache: 1 MiB
L1l cache: 1 MiB
L2 cache: 16 MiB
L3 cache: 128 MiB
NUMA node0 CPU(s): 0-7,32-39
NUMA node1 CPU(s): 8-15,40-47
NUMA node2 CPU(s): 16-23,48-55
NUMA node3 CPU(s): 24-31,56-63
Vulnerability Itlb multihit: Not affected
Vulnerability L1f: 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 Txs 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 rdscpp lm constant_tsc rep_good nopl nonstop_tsc cpubind 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 misa sse4sse3 3dnowprefetch osvw ibrst wdt tce topoext perfctr_core perfctr_nb bpxe perfctr_llc mwaitx cpb cat_13 cdp_13 hw_pstate sme ssbd mba sev ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 cmq rdt_a rdsed adx smap clflushopt clwb sha ni xsavesopt xsaveopt xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local clzero irlperf xsaveopt xsaveopt wbinvd arat npt ltdv svm_lock rdrand nrip_save tsc_scale vmcb_clean flushbyasid decodeassistpekaesfilter pfthreshold avic v_vmsave_vmload vgif umip rdpid overflow_recov succor smca

/proc/cpuinfo cache data

(Continued on next page)
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SPECspace®2017_int_base = 11.0
SPECspace®2017_int_peak = 11.5

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

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

Platform Notes (Continued)

cache size : 512 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 32 33 34 35 36 37 38 39
node 0 size: 128883 MB
node 0 free: 128373 MB
node 1 cpus: 8 9 10 11 12 13 14 15 40 41 42 43 44 45 46 47
node 1 size: 128992 MB
node 1 free: 128564 MB
node 2 cpus: 16 17 18 19 20 21 22 23 48 49 50 51 52 53 54 55
node 2 size: 129016 MB
node 2 free: 128519 MB
node 3 cpus: 24 25 26 27 28 29 30 31 56 57 58 59 60 61 62 63
node 3 size: 129003 MB
node 3 free: 128602 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: 528277112 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/"

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Hardware Availability: Mar-2021
Software Availability: Jan-2021

Platform Notes (Continued)

 uname -a:
 Linux ubuntu-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): 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):
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 5 Jan 29 17:01

SPEC is set to: /home/cpu2017
Files system 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 HMAA8GR7AJR4N-XN 64 GB 2 rank 3200

BIOS:
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 5.17
BIOS Date: 01/25/2021
BIOS Revision: 5.17
(Continued on next page)
## Platform Notes (Continued)

(End of data from sysinfo program)

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### Compiler Version Notes

<table>
<thead>
<tr>
<th>Programming Language</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>C</strong></td>
<td>600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)</td>
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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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AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

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(Continued on next page)
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Compiler Version Notes (Continued)

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C++  | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)  
     | 631.deepsjeng_s(base, peak) 641.leela_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 | 648.exchange2_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
==============================================================================

Base Compiler Invocation

C benchmarks:  
clang

C++ benchmarks:  
clang++

Fortran benchmarks:  
flang

Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64  
602.gcc_s: -DSPEC_LP64  
605.mcf_s: -DSPEC_LP64  
620.omnetpp_s: -DSPEC_LP64  
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64  
625.x264_s: -DSPEC_LP64  
631.deepsjeng_s: -DSPEC_LP64  
641.leela_s: -DSPEC_LP64  
648.exchange2_s: -DSPEC_LP64

(Continued on next page)
## SPEC CPU®2017 Integer Speed Result

### Supermicro

A+ SuperWorkstation 5014A-TT  
(M12SWA-TF, AMD Ryzen Threadripper PRO 3975WX)

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<tr>
<th>CPU2017 License: 001176</th>
<th>Test Date: Jan-2021</th>
</tr>
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<tbody>
<tr>
<td>Test Sponsor: Supermicro</td>
<td>Hardware Availability: Mar-2021</td>
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<tr>
<td>Tested by: Supermicro</td>
<td>Software Availability: Jan-2021</td>
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</table>

**SPECspeed®2017_int_base = 11.0**  
**SPECspeed®2017_int_peak = 11.5**

### Base Portability Flags (Continued)

657.xz_s: --DSPEC_LP64

### Base Optimization Flags

**C benchmarks:**
- -flto -Wl,-mlllvm -Wl,-function-specialize  
- -Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC  
- -Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math  
- -march=znver2 -fstruct-layout=3 -mlllvm -unroll-threshold=50  
- -fremap-arrays -mlllvm -function-specialize -mlllvm -enable-gvn-hoist  
- -mlllvm -reduce-array-computations=3 -mlllvm -global-vectorize-slp  
- -mlllvm -vector-library=LIBMVEC -mlllvm -inline-threshold=1000  
- -flv-function-specialization =z muldefs -DSPEC_OPENMP -fopenmp  
- -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc  
- -lflang

**C++ benchmarks:**
- -flto -Wl,-mlllvm -Wl,-function-specialize  
- -Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC  
- -Wl,-mlllvm -Wl,-reduce-array-computations=3  
- -Wl,-mlllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2  
- -mlllvm -loop-unswitch-threshold=200000 -mlllvm -vector-library=LIBMVEC  
- -mlllvm -unroll-threshold=100 -flv-function-specialization  
- -mlllvm -enable-partial-unswitch =z muldefs -DSPEC_OPENMP -fopenmp  
- -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc  
- -lflang

**Fortran benchmarks:**
- -flto -Wl,-mlllvm -Wl,-function-specialize  
- -Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC  
- -Wl,-mlllvm -Wl,-reduce-array-computations=3 -ffast-math  
- -Wl,-mlllvm -Wl,-inline-recursion=4 -Wl,-mlllvm -Wl,-lsr-in-nested-loop  
- -Wl,-mlllvm -Wl,-enable-lv-split -O3 -march=znver2 -funroll-loops  
- -Mrecursive -mlllvm -vector-library=LIBMVEC =z muldefs  
- -mlllvm -disable-indvar-simplify -mlllvm -unroll-aggressive  
- -mlllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp  
- -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

### Base Other Flags

**C benchmarks:**
- -Wno-return-type

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

C++ benchmarks:
- `-Wno-return-type`

Fortran benchmarks:
- `-Wno-return-type`

## Peak Compiler Invocation

C benchmarks:
- `clang`

C++ benchmarks:
- `clang++`

Fortran benchmarks:
- `flang`

## Peak Portability Flags

- `600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64`
- `602.gcc_s: -DSPEC_LP64`
- `605.mcfs: -DSPEC_LP64`
- `620.omnetpp_s: -DSPEC_LP64`
- `623.xalancbmk_s: -DSPEC_LINUX -D_FILE_OFFSET_BITS=64`
- `625.x264_s: -DSPEC_LP64`
- `631.deepsjeng_s: -DSPEC_LP64`
- `641.leela_s: -DSPEC_LP64`
- `648.exchange2_s: -DSPEC_LP64`
- `657.xz_s: -DSPEC_LP64`

## Peak Optimization Flags

C benchmarks:
- `600.perlbench_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`

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**SPEC CPU®2017 Integer Speed Result**

Supermicro
A+ SuperWorkstation 5014A-TT
(M12SWA-TF, AMD Ryzen Threadripper PRO 3975WX)

| SPECspeed®2017_int_base = 11.0 |
| SPECspeed®2017_int_peak = 11.5 |

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<td>test</td>
<td>Jan-2021</td>
<td>Mar-2021</td>
<td>Jan-2021</td>
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</tbody>
</table>

**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

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**Peak Optimization Flags (Continued)**

600.perlbench_s (continued):
- fprofile-instr-generate (pass 1)
- fprofile-instr-use (pass 2) -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
- lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ldl
- ljemalloc -lflang

602.gcc_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
- 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 -z muldefs -DSPEC_OPENMP
- fopenmp -fgnu89-inline -fopenmp=libomp -lomp -lpthread
- -ldl -ljemalloc

605.mcf_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
- 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
- lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ldl
- ljemalloc -lflang

625.x264_s: Same as 600.perlbench_s

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

657.xz_s: -flto -Wl,-mlllvm -Wl,-function-specialize
-mlllvm -Wl,-region-vectorize
-mlllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlllvm -vectorize-memory-aggressively
-mlllvm -function-specialize -mlllvm -enable-gvn-hoist
-mlllvm -unroll-threshold=50 -fremap-arrays
-mlllvm -vector-library=LIBMVEC
-mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp -mlllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

C++ benchmarks:

620.omnetpp_s: -flto -Wl,-mlllvm -Wl,-function-specialize
-mlllvm -Wl,-region-vectorize
-mlllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

631.deepsjeng_s: -m32 -flto -Wl,-mlllvm -Wl,-function-specialize
-mlllvm -Wl,-region-vectorize
-mlllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -ljemalloc

641.leela_s: basepeak = yes

(Continued on next page)
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SPECspeed®2017_int_base = 11.0
SPECspeed®2017_int_peak = 11.5

Peak Optimization Flags (Continued)

Fortran benchmarks:
-fflto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
-Mrecursive -mllvm -Wl,-vector-library=LIBMVEC
-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

Peak Other Flags

C benchmarks:
-Wno-return-type

C++ benchmarks (except as noted below):
-Wno-return-type

623.xalancbmk_s: -Wno-return-type
-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32

Fortran benchmarks:
-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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