Supermicro
A+ SuperWorkstation 5014A-TT
(M12SWA-TF, AMD Ryzen Threadripper PRO 3995WX)

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

### SPEC CPU®2017 Integer Speed Result

<table>
<thead>
<tr>
<th>Test</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>11.8</td>
<td>12.0</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>2.85</td>
<td>19.0</td>
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<td>605.mcf_s</td>
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<td>620.omnetpp_s</td>
<td>5.92</td>
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</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>12.1</td>
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<tr>
<td>625.x264_s</td>
<td>13.0</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>6.03</td>
<td>16.1</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>6.25</td>
<td>16.5</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>5.44</td>
<td>20.6</td>
</tr>
<tr>
<td>657.xz_s</td>
<td></td>
<td>21.3</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** AMD Ryzen Threadripper PRO 3995WX
- **Max MHz:** 4200
- **Nominal:** 2700
- **Enabled:** 64 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:** 256 MB I+D on chip per chip, 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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SPECspec 2017 Integer Speed Result

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

Results Table

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<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
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<td>64</td>
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<td>5.91</td>
<td>303</td>
<td>5.85</td>
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<td>602gcc_s</td>
<td>64</td>
<td>338</td>
<td>11.8</td>
<td>335</td>
<td>11.9</td>
<td>336</td>
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<tr>
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<td>143</td>
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<td>657xz_s</td>
<td>64</td>
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<td>26.6</td>
<td>64</td>
<td>232</td>
<td>26.6</td>
<td>232</td>
</tr>
</tbody>
</table>

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)
**SPEC CPU®2017 Integer Speed Result**

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

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

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:

- `GOMP_CPU_AFFINITY = "0-127"`
- `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 = "128"

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 = "0-63"

**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)
**SPEC CPU®2017 Integer Speed Result**

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

**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 Mon Jan 18 10:50:29 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 3995WX 64-Cores
1 "physical id"s (chips)
128 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores: 64
siblings: 128
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

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): 128
On-line CPU(s) list: 0-127
Thread(s) per core: 2

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
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SPECspeed®2017_int_base = 11.0
SPECspeed®2017_int_peak = 11.5

Platform Notes (Continued)

Core(s) per socket: 64
Socket(s): 1
NUMA node(s): 1
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD Ryzen Threadripper PRO 3995WX 64-Cores
Stepping: 0
Frequency boost: enabled
CPU MHz: 2656.894
CPU max MHz: 2700.0000
CPU min MHz: 2200.0000
BogoMIPS: 5399.97
Virtualization: AMD-V
L1d cache: 2 MiB
L1i cache: 2 MiB
L2 cache: 32 MiB
L3 cache: 256 MiB
NUMA node0 CPU(s): 0-127
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spectre 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 retropine, IBPB conditional, STIBP conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsa 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 pdelpgd rdtscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperffmaperf 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 3nowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bptext perfctr_llc mwaitx cpb cat_13 cdp_13 hw_pstate sme ssbd mba sev ibbp stibp vmmcall fsgsb base bmil avx2 smep bmi2 cmq rdt_a rdsseed adx smap clflushopt clwb sha ni xsavesopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr wboinvd arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold avic v_mmsave_vmload vgif umip rdpid overflow_recov succor smca

/proc/cpuinfo cache data
  cache size : 512 KB

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

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**Supermicro**

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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)**

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a physical chip.

available: 1 nodes (0)

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 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 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

node 0 size: 515702 MB
node 0 free: 513960 MB

node distances:
node 0: 0

From /proc/meminfo
MemTotal: 528078860 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 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): Not affected

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

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SPECspeed® 2017_int_base = 11.0
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Test Sponsor: Supermicro
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Test Date: Jan-2021
Hardware Availability: Mar-2021
Software Availability: Jan-2021

Platform Notes (Continued)

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, IBPP: conditional, STIBPP: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Jan 18 18:48

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 ext4 272G 16G 243G 6% /

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: 01/11/2021
  BIOS Revision: 5.17

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C  | 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)
==============================================================================
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins)

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

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++ | 623.xalancbmk_s(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
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

==============================================================================
C++ | 623.xalancbmk_s(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
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

(Continued on next page)
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| SPECspeed®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

Compiler Version Notes (Continued)

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 Portatility 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
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-fto -WT,-mllvm -WT,-function-specialize
-WT,-mllvm -WT,-region-vectorize -WT,-mllvm -WT,-vector-library=LIBMVEC
-WT,-mllvm -WT,-reduce-array-computations=3 -O3 -ffast-math

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

**Supermicro**

A+ SuperWorkstation 5014A-TT
(M12SWA-TF, AMD Ryzen Threadripper PRO 3955WX)

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<tr>
<th>SPECspeed®2017_int_base</th>
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<td>11.0</td>
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**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Hardware Availability:** Mar-2021

**Test Date:** Jan-2021

**Tested by:** Supermicro

**Software Availability:** Jan-2021

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**Base Optimization Flags (Continued)**

**C benchmarks: (continued)**

- `-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`
- `-fllvm-function-specialization`
- `-fopenmp`
- `-lomp`
- `-lpthread`
- `-ldl`
- `-lmvec`
- `-lamdlibm`
- `-ljemalloc`
- `-lflang`

**C++ benchmarks:**

- `-fllto`
- `-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`
- `-mllvm -loop-unswitch-threshold=200000`
- `-mllvm -vector-library=LIBMVEC`
- `-mllvm -unroll-threshold=100`
- `-flv-function-specialization`
- `-fopenmp`
- `-lomp`
- `-lpthread`
- `-ldl`
- `-lmvec`
- `-lamdlibm`
- `-ljemalloc`
- `-lflang`

**Fortran benchmarks:**

- `-fllto`
- `-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`
- `-mllvm -funroll-loops`
- `-Mrecursive`
- `-mllvm -vector-library=LIBMVEC`
- `-z muldefs`
- `-mllvm -disable-indvar-simplify`
- `-mllvm -unroll-aggressive`
- `-mllvm -unroll-threshold=150`
- `-dopenmp`
- `-fopenmp`
- `-lomp`
- `-lpthread`
- `-ldl`
- `-lmvec`
- `-lamdlibm`
- `-ljemalloc`
- `-lflang`

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**Base Other Flags**

**C benchmarks:**

- `-Wno-return-type`

**C++ benchmarks:**

- `-Wno-return-type`

**Fortran benchmarks:**

- `-Wno-return-type`
Peek 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.mcf_s: -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.leelang_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
-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

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Supermicro

A+ SuperWorkstation 5014A-TT
(M12SWA-TF, AMD Ryzen Threadripper PRO 3995WX)

SPEC CPU®2017 Integer Speed Result

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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

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

Peak Optimization Flags (Continued)

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
-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 -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
-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 -z muldefs -DSPEC_OPENMP -fopenmp
-lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc -lflang

625.x264_s: Same as 600.perlbench_s

657.xz_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

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

657.xz_s (continued):
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

C++ benchmarks:

620.omnetpp_s: -flto -Wl,-mlllvm -W1,-function-specialize
-W1,-mlllvm -W1,-region-vectorize
-W1,-mlllvm -W1,-vector-library=LIBMVEC
-W1,-mlllvm -W1,-reduce-array-computations=3 -Ofast
-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

623.xalancbmk_s: -m32 -flto -Wl,-mlllvm -W1,-function-specialize
-W1,-mlllvm -W1,-region-vectorize
-W1,-mlllvm -W1,-vector-library=LIBMVEC
-W1,-mlllvm -W1,-reduce-array-computations=3 -Ofast
-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

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: basepeak = yes

Fortran benchmarks:
-flto -W1,-mlllvm -W1,-function-specialize
-W1,-mlllvm -W1,-region-vectorize -W1,-mlllvm -W1,-vector-library=LIBMVEC
-W1,-mlllvm -W1,-reduce-array-computations=3 -ffast-math
-W1,-mlllvm -W1,-inline-recursion=4 -W1,-mlllvm -W1,-lsr-in-nested-loop
-W1,-mlllvm -W1,-enable-iv-split -O3 -march=znver2 -funroll-loops
-Mrecursive -mlllvm -vector-library=LIBMVEC
-mlllvm -disable-indvar-simplify -mlllvm -unroll-aggressive
-mlllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang
# SPEC CPU®2017 Integer Speed Result

**Supermicro**

A+ SuperWorkstation 5014A-TT  
(M12SWA-TF, AMD Ryzen Threadripper PRO 3995WX)

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</tbody>
</table>

## 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:  

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