SPEC CPU®2017 Integer Speed Result

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Supermicro
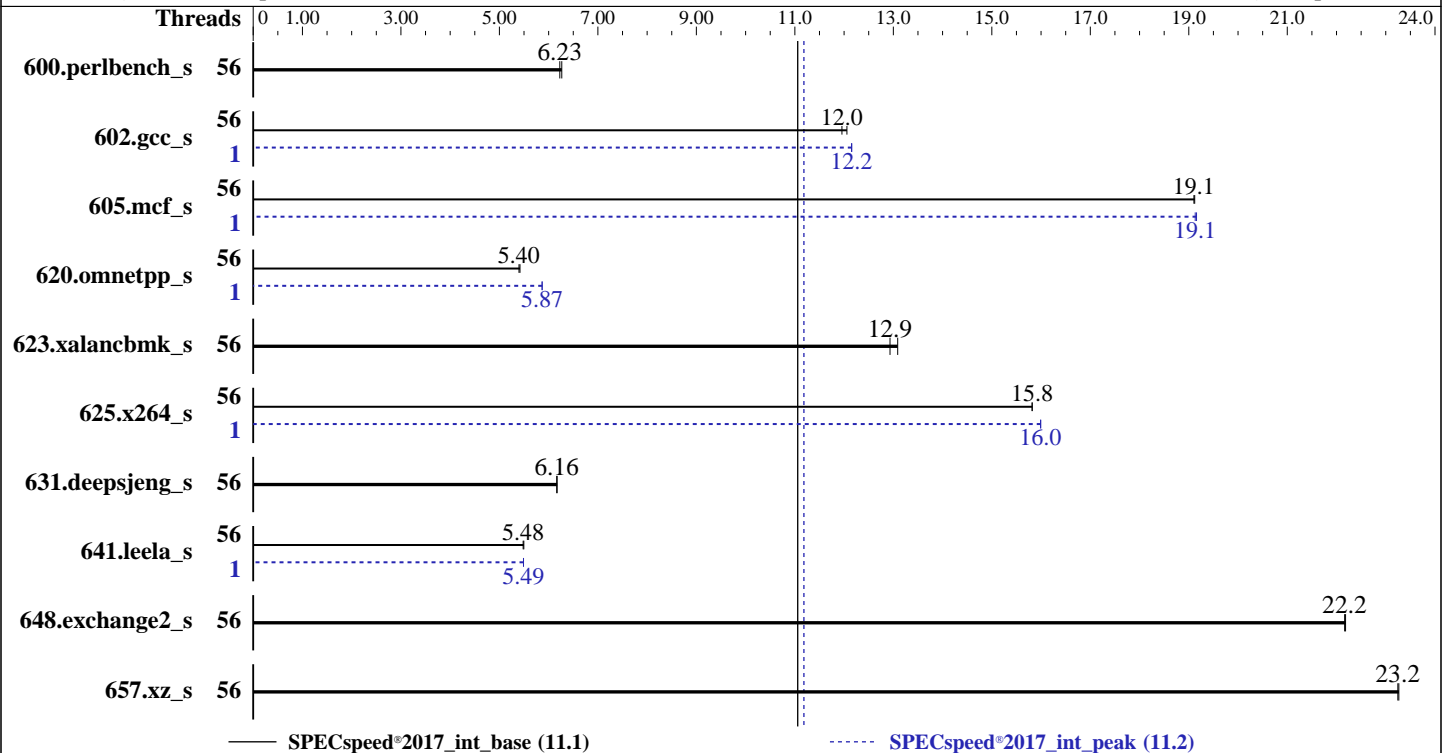
A+ Server 2024US-TRT
(H12DSU-iN , AMD EPYC 7453)

$SPECspeed®2017\_int\_base = 11.1$

$SPECspeed®2017\_int\_peak = 11.2$

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: May-2021

Hardware Availability: Mar-2021

Software Availability: Apr-2021

Threads		Result
600.perlbench_s	56	6.23
602.gcc_s	56	12.0
	1	12.2
605.mcf_s	56	19.1
	1	19.1
620.omnetpp_s	56	5.40
	1	5.87
623.xalancbmk_s	56	12.9
625.x264_s	56	15.8
	1	16.0
631.deepsjeng_s	56	6.16
641.leela_s	56	5.48
	1	5.49
648.exchange2_s	56	22.2
657.xz_s	56	23.2

SPECspeed®2017_int_base (11.1)   SPECspeed®2017_int_peak (11.2)

Hardware

CPU Name: AMD EPYC 7453

  Max MHz: 3450

  Nominal: 2750

Enabled: 56 cores, 2 chips, 2 threads/core

Orderable: 1,2 chips

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 chip, 16 MB shared / 7 cores

  Other: None

Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)

Storage: 1 x 200 GB SATA III SSD

Other: None

Software

OS: Ubuntu 20.04.2 LTS
    Kernel 5.4.0-73-generic

Compiler: C/C++/Fortran: Version 3.0.0 of AOCC

Parallel: Yes

Firmware: Version 2.0 released Feb-2021

File System: ext4

System State: Run level 3 (multi-user)

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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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	56	**285**	**6.23**	283	6.27			56	**285**	**6.23**	283	6.27		
602.gcc_s	56	330	12.1	**333**	**12.0**			1	328	12.2	**328**	**12.2**		
605.mcf_s	56	**247**	**19.1**	247	19.1			1	**247**	**19.1**	246	19.2		
620.omnetpp_s	56	301	5.42	**302**	**5.40**			1	278	5.87	**278**	**5.87**		
623.xalancbmk_s	56	108	13.1	**110**	**12.9**			56	108	13.1	**110**	**12.9**		
625.x264_s	56	**112**	**15.8**	112	15.8			1	**110**	**16.0**	110	16.0		
631.deepsjeng_s	56	**232**	**6.16**	232	6.17			56	**232**	**6.16**	232	6.17		
641.leela_s	56	310	5.50	**311**	**5.48**			1	311	5.49	**311**	**5.49**		
648.exchange2_s	56	133	22.2	**133**	**22.2**			56	133	22.2	**133**	**22.2**		
657.xz_s	56	266	23.3	**266**	**23.2**			56	266	23.3	**266**	**23.2**		
SPECspeed®2017_int_base =	**11.1**													
SPECspeed®2017_int_peak =	**11.2**													

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 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,
```

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Standard Performance Evaluation Corporation (info@spec.org)

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Operating System Notes (Continued)

```
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-111"
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 = "112"

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 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 641.leela_s peak run:
GOMP_CPU_AFFINITY = "0"
```

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:
```

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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
cTDP Control = Manual
cTDP = 240
Package Power Limit Control = Manual
Package Power Limit = 240
APBDIS = 1
NUMA Nodes Per Socket = NPS4

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on h12dsu-7453 Mon May 24 17:59:59 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 EPYC 7453 28-Core Processor
       2  "physical id"s (chips)
       112 "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 : 28
       siblings  : 56
       physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
       physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30

 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):                   112
    On-line CPU(s) list:      0-111
    Thread(s) per core:       2
    Core(s) per socket:       28
    Socket(s):                2
```

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Platform Notes (Continued)

```
NUMA node(s):                 8
Vendor ID:                    AuthenticAMD
CPU family:                   25
Model:                        1
Model name:                   AMD EPYC 7453 28-Core Processor
Stepping:                     1
Frequency boost:              enabled
CPU MHz:                      1799.546
CPU max MHz:                  2750.0000
CPU min MHz:                  1500.0000
BogoMIPS:                     5499.65
Virtualization:               AMD-V
L1d cache:                    1.8 MiB
L1i cache:                    1.8 MiB
L2 cache:                     28 MiB
L3 cache:                     128 MiB
NUMA node0 CPU(s):            0-6,56-62
NUMA node1 CPU(s):            7-13,63-69
NUMA node2 CPU(s):            14-20,70-76
NUMA node3 CPU(s):            21-27,77-83
NUMA node4 CPU(s):            28-34,84-90
NUMA node5 CPU(s):            35-41,91-97
NUMA node6 CPU(s):            42-48,98-104
NUMA node7 CPU(s):            49-55,105-111
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,
IBRS_FW, STIBP 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 rdtscp 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
bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs
ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a rdseed adx
smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc
cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr wbnoinvd arat npt lbrv svm_lock
nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold
```

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Platform Notes (Continued)

```
     v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq rdpid overflow_recov succor smca

 From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL
      L1d        32K      1.8M    8 Data            1
      L1i        32K      1.8M    8 Instruction     1
      L2        512K       28M    8 Unified         2
      L3         16M      128M   16 Unified         3

 /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: 8 nodes (0-7)
   node 0 cpus: 0 1 2 3 4 5 6 56 57 58 59 60 61 62
   node 0 size: 64382 MB
   node 0 free: 63985 MB
   node 1 cpus: 7 8 9 10 11 12 13 63 64 65 66 67 68 69
   node 1 size: 64508 MB
   node 1 free: 64062 MB
   node 2 cpus: 14 15 16 17 18 19 20 70 71 72 73 74 75 76
   node 2 size: 64508 MB
   node 2 free: 64153 MB
   node 3 cpus: 21 22 23 24 25 26 27 77 78 79 80 81 82 83
   node 3 size: 64496 MB
   node 3 free: 64060 MB
   node 4 cpus: 28 29 30 31 32 33 34 84 85 86 87 88 89 90
   node 4 size: 64508 MB
   node 4 free: 63996 MB
   node 5 cpus: 35 36 37 38 39 40 41 91 92 93 94 95 96 97
   node 5 size: 64508 MB
   node 5 free: 64012 MB
   node 6 cpus: 42 43 44 45 46 47 48 98 99 100 101 102 103 104
   node 6 size: 64484 MB
   node 6 free: 64116 MB
   node 7 cpus: 49 50 51 52 53 54 55 105 106 107 108 109 110 111
   node 7 size: 64507 MB
   node 7 free: 64162 MB
   node distances:
   node   0    1    2    3    4    5    6    7
     0:  10   12   12   12   32   32   32   32
     1:  12   10   12   12   32   32   32   32
     2:  12   12   10   12   32   32   32   32
     3:  12   12   12   10   32   32   32   32
     4:  32   32   32   32   10   12   12   12
     5:  32   32   32   32   12   10   12   12
```

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Platform Notes (Continued)

```
     6:  32  32  32  32  12  12  10  12
     7:  32  32  32  32  12  12  12  10

From /proc/meminfo
   MemTotal:       528284340 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/sbin/tuned-adm active
    Current active profile: throughput-performance

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

/usr/bin/lsb_release -d
   Ubuntu 20.04.2 LTS

From /etc/*release* /etc/*version*
   debian_version: bullseye/sid
   os-release:
      NAME="Ubuntu"
      VERSION="20.04.2 LTS (Focal Fossa)"
      ID=ubuntu
      ID_LIKE=debian
      PRETTY_NAME="Ubuntu 20.04.2 LTS"
      VERSION_ID="20.04"
      HOME_URL="https://www.ubuntu.com/"
      SUPPORT_URL="https://help.ubuntu.com/"

uname -a:
   Linux h12dsu-7453 5.4.0-73-generic #82-Ubuntu SMP Wed Apr 14 17:39:42 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, IBRS_FW, STIBP:
```

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Platform Notes (Continued)

```
                                                    always-on, RSB filling
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
 CVE-2019-11135 (TSX Asynchronous Abort):              Not affected

 run-level 3 May 24 03:46

 SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       ext4  178G   18G  152G  11% /

 From /sys/devices/virtual/dmi/id
    Vendor:         Supermicro
    Product:        AS-2024US-TRT
    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:
     16x NO DIMM Unknown
     16x SK Hynix HMAA4GR7AJR8N-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)
```

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)
------------------------------------------------------------------------------
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++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)
```

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Compiler Version Notes (Continued)

```
        | 631.deepsjeng_s(base, peak) 641.leela_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 | 648.exchange2_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
------------------------------------------------------------------------------
```

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`
657.xz_s: `-DSPEC_LP64`

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Base Optimization Flags

C benchmarks:

```
-m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
-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
-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 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti
```

C++ benchmarks:

```
-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-do-block-reorder=aggressive
-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
-fveclib=AMDLIBM -ffast-math -flto -mllvm -enable-partial-unswitch
-mllvm -unroll-threshold=100 -finline-aggressive
-flv-function-specialization -mllvm -loop-unswitch-threshold=200000
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -extra-vectorizer-passes -mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -mllvm -convert-pow-exp-to-int=false
-z muldefs -mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
-lflangrti
```

Fortran benchmarks:

```
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
-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
-fveclib=AMDLIBM -ffast-math -flto -z muldefs
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
-lflangrti
```

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

SPEC CPU®2017 Integer Speed Result

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Supermicro

A+ Server 2024US-TRT
(H12DSU-iN , AMD EPYC 7453)

SPECspeed®2017_int_base = 11.1

SPECspeed®2017_int_peak = 11.2

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

Test Date: May-2021
Hardware Availability: Mar-2021
Software Availability: Apr-2021

Base Other Flags

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

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

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

Peak Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

600.perlbench_s: basepeak = yes

602.gcc_s: `-m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition`
`-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 -fveclib=AMDLIBM -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`

(Continued on next page)

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Peak Optimization Flags (Continued)

602.gcc_s (continued):
```
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

605.mcf_s: `Same as 602.gcc_s`

625.x264_s: `Same as 602.gcc_s`

657.xz_s: `basepeak = yes`

C++ benchmarks:

620.omnetpp_s: `-m64 -std=c++98 -mno-adx -mno-sse4a`
```
-Wl,-mllvm -Wl,-do-block-reorder=aggressive
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-finline-aggressive -mllvm -unroll-threshold=100
-flv-function-specialization -mllvm -enable-licm-vrp
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang
```

623.xalancbmk_s: `basepeak = yes`

631.deepsjeng_s: `basepeak = yes`

641.leela_s: `Same as 620.omnetpp_s`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

Peak Other Flags

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

Supermicro

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Peak Other Flags (Continued)

C++ benchmarks:

```
-Wno-unused-command-line-argument -Wno-return-type
```

Fortran benchmarks:

```
-Wno-return-type
```

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/aocc300-flags-B2.html

http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Milan-revB.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/aocc300-flags-B2.xml

http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Milan-revB.xml

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

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