



# SPEC CPU®2017 Integer Speed Result

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## Supermicro

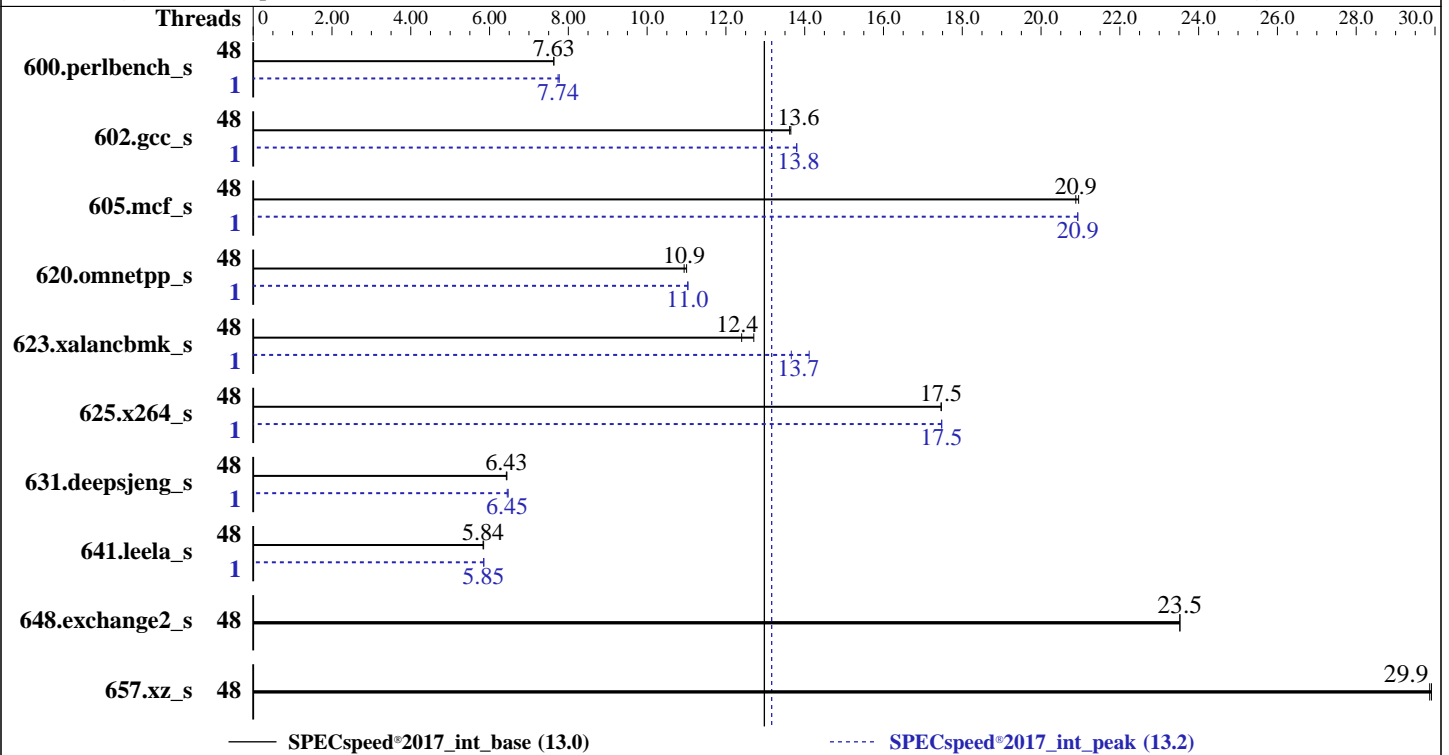
A+ Server 2024US-TRT  
(H12DSU-iN , AMD EPYC 7473X)

SPECspeed®2017\_int\_base = 13.0

SPECspeed®2017\_int\_peak = 13.2

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

Test Date: Feb-2022  
Hardware Availability: Mar-2022  
Software Availability: Feb-2022



### Hardware

CPU Name: AMD EPYC 7473X  
 Max MHz: 3700  
 Nominal: 2800  
 Enabled: 48 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: 768 MB I+D on chip per chip, 96 MB shared / 3 cores  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)  
 Storage: 1 x 200 GB SATA III SSD  
 Other: None

### Software

OS: Ubuntu 20.04.3 LTS  
 Kernel 5.4.0-99-generic  
 Compiler: C/C++/Fortran: Version 3.2.0 of AOCC  
 Parallel: Yes  
 Firmware: Version 2.3a released Jan-2022  
 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 and OS 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	48	233	7.63	<b><u>233</u></b>	<b><u>7.63</u></b>			1	<b><u>229</u></b>	<b><u>7.74</u></b>	228	7.77		
602.gcc_s	48	<b><u>292</u></b>	<b><u>13.6</u></b>	292	13.6			1	289	13.8	<b><u>289</u></b>	<b><u>13.8</u></b>		
605.mcf_s	48	225	21.0	<b><u>226</u></b>	<b><u>20.9</u></b>			1	226	20.9	<b><u>226</u></b>	<b><u>20.9</u></b>		
620.omnetpp_s	48	148	11.0	<b><u>149</u></b>	<b><u>10.9</u></b>			1	148	11.0	<b><u>148</u></b>	<b><u>11.0</u></b>		
623.xalancbmk_s	48	<b><u>114</u></b>	<b><u>12.4</u></b>	112	12.7			1	<b><u>104</u></b>	<b><u>13.7</u></b>	100	14.1		
625.x264_s	48	101	17.5	<b><u>101</u></b>	<b><u>17.5</u></b>			1	<b><u>101</u></b>	<b><u>17.5</u></b>	101	17.5		
631.deepsjeng_s	48	222	6.44	<b><u>223</u></b>	<b><u>6.43</u></b>			1	221	6.47	<b><u>222</u></b>	<b><u>6.45</u></b>		
641.leela_s	48	<b><u>292</u></b>	<b><u>5.84</u></b>	292	5.85			1	291	5.86	<b><u>292</u></b>	<b><u>5.85</u></b>		
648.exchange2_s	48	125	23.5	<b><u>125</u></b>	<b><u>23.5</u></b>			48	125	23.5	<b><u>125</u></b>	<b><u>23.5</u></b>		
657.xz_s	48	207	29.9	<b><u>207</u></b>	<b><u>29.9</u></b>			48	207	29.9	<b><u>207</u></b>	<b><u>29.9</u></b>		

SPECspeed®2017\_int\_base = **13.0**

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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,

(Continued on next page)



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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 = "0-95"  
LD_LIBRARY_PATH =  
    "/home/cpu2017/amd_speed_aocc320_milanx_A_lib/lib;/home/cpu2017/amd_spee  
    d_aocc320_milanx_A_lib/lib32:"  
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"  
MALLOC_CONF = "retain:true"  
OMP_DYNAMIC = "false"  
OMP_SCHEDULE = "static"  
OMP_STACKSIZE = "128M"  
OMP_THREAD_LIMIT = "96"
```

```
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"
```

```
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 641.leela_s peak run:  
GOMP_CPU_AFFINITY = "0"
```



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### 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>

### Platform Notes

BIOS Settings:

Determinism Control = Manual

Determinism Slider = Power

cTDP Control = Manual

cTDP = 280

Package Power Limit Control = Manual

Package Power Limit = 280

APBDIS = 1

NUMA Nodes Per Socket = NPS4

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d

running on h12dsu-7473x Fri Feb 18 22:07:24 2022

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 7473X 24-Core Processor

2 "physical id"s (chips)

96 "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 : 24

siblings : 48

physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30

physical 1: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30

From lscpu from util-linux 2.34:

(Continued on next page)



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### Platform Notes (Continued)

```

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):                       96
On-line CPU(s) list:         0-95
Thread(s) per core:          2
Core(s) per socket:          24
Socket(s):                    2
NUMA node(s):                16
Vendor ID:                    AuthenticAMD
CPU family:                   25
Model:                        1
Model name:                   AMD EPYC 7473X 24-Core Processor
Stepping:                     2
Frequency boost:              enabled
CPU MHz:                      1799.870
CPU max MHz:                  2800.0000
CPU min MHz:                  1500.0000
BogoMIPS:                     5600.16
Virtualization:               AMD-V
L1d cache:                    1.5 MiB
L1i cache:                    1.5 MiB
L2 cache:                     24 MiB
L3 cache:                     1.5 GiB
NUMA node0 CPU(s):           0-2,48-50
NUMA node1 CPU(s):           3-5,51-53
NUMA node2 CPU(s):           6-8,54-56
NUMA node3 CPU(s):           9-11,57-59
NUMA node4 CPU(s):           12-14,60-62
NUMA node5 CPU(s):           15-17,63-65
NUMA node6 CPU(s):           18-20,66-68
NUMA node7 CPU(s):           21-23,69-71
NUMA node8 CPU(s):           24-26,72-74
NUMA node9 CPU(s):           27-29,75-77
NUMA node10 CPU(s):          30-32,78-80
NUMA node11 CPU(s):          33-35,81-83
NUMA node12 CPU(s):          36-38,84-86
NUMA node13 CPU(s):          39-41,87-89
NUMA node14 CPU(s):          42-44,90-92
NUMA node15 CPU(s):          45-47,93-95
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

```

(Continued on next page)



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### Platform Notes (Continued)

Vulnerability Spectre v1: Mitigation; usercopy/swaggs 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 pdpelgb 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 bml avx2 smep bmi2 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 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	1.5M	8	Data	1
L1i	32K	1.5M	8	Instruction	1
L2	512K	24M	8	Unified	2
L3	96M	1.5G	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: 16 nodes (0-15)  
 node 0 cpus: 0 1 2 48 49 50  
 node 0 size: 64381 MB  
 node 0 free: 64104 MB  
 node 1 cpus: 3 4 5 51 52 53  
 node 1 size: 64479 MB  
 node 1 free: 64230 MB  
 node 2 cpus: 6 7 8 54 55 56  
 node 2 size: 64510 MB  
 node 2 free: 64108 MB  
 node 3 cpus: 9 10 11 57 58 59  
 node 3 size: 64509 MB  
 node 3 free: 64245 MB  
 node 4 cpus: 12 13 14 60 61 62  
 node 4 size: 64510 MB  
 node 4 free: 64283 MB

(Continued on next page)



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### Platform Notes (Continued)

```

node 5 cpus: 15 16 17 63 64 65
node 5 size: 64509 MB
node 5 free: 64289 MB
node 6 cpus: 18 19 20 66 67 68
node 6 size: 64510 MB
node 6 free: 64024 MB
node 7 cpus: 21 22 23 69 70 71
node 7 size: 64497 MB
node 7 free: 64178 MB
node 8 cpus: 24 25 26 72 73 74
node 8 size: 64510 MB
node 8 free: 64294 MB
node 9 cpus: 27 28 29 75 76 77
node 9 size: 64509 MB
node 9 free: 64285 MB
node 10 cpus: 30 31 32 78 79 80
node 10 size: 64510 MB
node 10 free: 64297 MB
node 11 cpus: 33 34 35 81 82 83
node 11 size: 64509 MB
node 11 free: 64294 MB
node 12 cpus: 36 37 38 84 85 86
node 12 size: 64510 MB
node 12 free: 64297 MB
node 13 cpus: 39 40 41 87 88 89
node 13 size: 64509 MB
node 13 free: 64295 MB
node 14 cpus: 42 43 44 90 91 92
node 14 size: 64510 MB
node 14 free: 64292 MB
node 15 cpus: 45 46 47 93 94 95
node 15 size: 64508 MB
node 15 free: 64291 MB

```

node distances:

node	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0:	10	11	12	12	12	12	12	12	32	32	32	32	32	32	32	32
1:	11	10	12	12	12	12	12	12	32	32	32	32	32	32	32	32
2:	12	12	10	11	12	12	12	12	32	32	32	32	32	32	32	32
3:	12	12	11	10	12	12	12	12	32	32	32	32	32	32	32	32
4:	12	12	12	12	10	11	12	12	32	32	32	32	32	32	32	32
5:	12	12	12	12	11	10	12	12	32	32	32	32	32	32	32	32
6:	12	12	12	12	12	12	10	11	32	32	32	32	32	32	32	32
7:	12	12	12	12	12	12	11	10	32	32	32	32	32	32	32	32
8:	32	32	32	32	32	32	32	32	10	11	12	12	12	12	12	12
9:	32	32	32	32	32	32	32	32	11	10	12	12	12	12	12	12
10:	32	32	32	32	32	32	32	32	12	12	10	11	12	12	12	12
11:	32	32	32	32	32	32	32	32	12	12	11	10	12	12	12	12

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### Platform Notes (Continued)

12:	32	32	32	32	32	32	32	32	32	12	12	12	12	10	11	12	12
13:	32	32	32	32	32	32	32	32	32	12	12	12	12	11	10	12	12
14:	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	10	11
15:	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	11	10

From /proc/meminfo

MemTotal: 1056754120 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 20.04.3 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 h12dsu-7473x 5.4.0-99-generic #112-Ubuntu SMP Thu Feb 3 13:50:55 UTC 2022 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/swaps barriers and __user pointer sanitization

(Continued on next page)





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### Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS\_FW, STIBP: 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 Feb 18 11:37

SPEC is set to: /home/cpu2017

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       ext4  178G   23G  147G  14% /
```

```
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 Samsung M393A8G40AB2-CWE 64 GB 2 rank 3200

BIOS:  
BIOS Vendor: American Megatrends Inc.  
BIOS Version: 2.3a  
BIOS Date: 01/25/2022  
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 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
-----
```

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### Compiler Version Notes (Continued)

```
=====  
C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)  
         | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)  
-----
```

```
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on  
LLVM Mirror.Version.13.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin  
-----
```

```
=====  
Fortran  | 648.exchange2_s(base, peak)  
-----
```

```
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on  
LLVM Mirror.Version.13.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/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
```

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# SPEC CPU®2017 Integer Speed Result

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## Supermicro

A+ Server 2024US-TRT  
(H12DSU-iN , AMD EPYC 7473X)

SPECspeed®2017\_int\_base = 13.0

SPECspeed®2017\_int\_peak = 13.2

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

**Test Date:** Feb-2022  
**Hardware Availability:** Mar-2022  
**Software Availability:** Feb-2022

## Base Portability Flags (Continued)

657.xz\_s: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:

```
-m64 -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 -fopenmp -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-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=libomp -lomp -lamdlibm -ljemalloc -lflang
```

C++ benchmarks:

```
-m64 -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 -fopenmp -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
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

Fortran benchmarks:

```
-m64 -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 -fopenmp -flto -z muldefs
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```



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SPECspeed®2017\_int\_peak = 13.2

**CPU2017 License:** 001176  
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**Tested by:** Supermicro

**Test Date:** Feb-2022  
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**Software Availability:** Feb-2022

## 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: -m64 -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 -fopenmp
-flto -fstruct-layout=5 -mllvm -unroll-threshold=50
-freap-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 -DSPEC_OPENMP
```

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## Peak Optimization Flags (Continued)

600.perlbench\_s (continued):

-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

602.gcc\_s: Same as 600.perlbench\_s

605.mcf\_s: Same as 600.perlbench\_s

625.x264\_s: -m64 -Wl,-allow-multiple-definition  
-Wl,-mllvm -Wl,-enable-licm-vrp  
-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 -Ofast  
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp  
-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 -do-block-reorder=aggressive -DSPEC\_OPENMP  
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

657.xz\_s: basepeak = yes

C++ benchmarks:

620.omnetpp\_s: -m64 -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 -fopenmp  
-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  
-fvirtual-function-elimination -fvisibility=hidden  
-DSPEC\_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc  
-lflang

623.xalancbmk\_s: -m64 -Wl,-mllvm -Wl,-function-specialize  
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -Ofast  
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp  
-flto -finline-aggressive -mllvm -unroll-threshold=100

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## Peak Optimization Flags (Continued)

623.xalancbmk\_s (continued):

```
-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=libomp -lomp -lamdlibm -ljemalloc
-lflang
```

631.deepsjeng\_s: -m64 -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 -fopenmp
-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
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang
```

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
```

C++ benchmarks:

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

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## Peak Other Flags (Continued)

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/aocc320-flags-A1.html>

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

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

<http://www.spec.org/cpu2017/flags/aocc320-flags-A1.xml>

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

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