



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 8.71

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_peak = 8.94

CPU2017 License: 9017

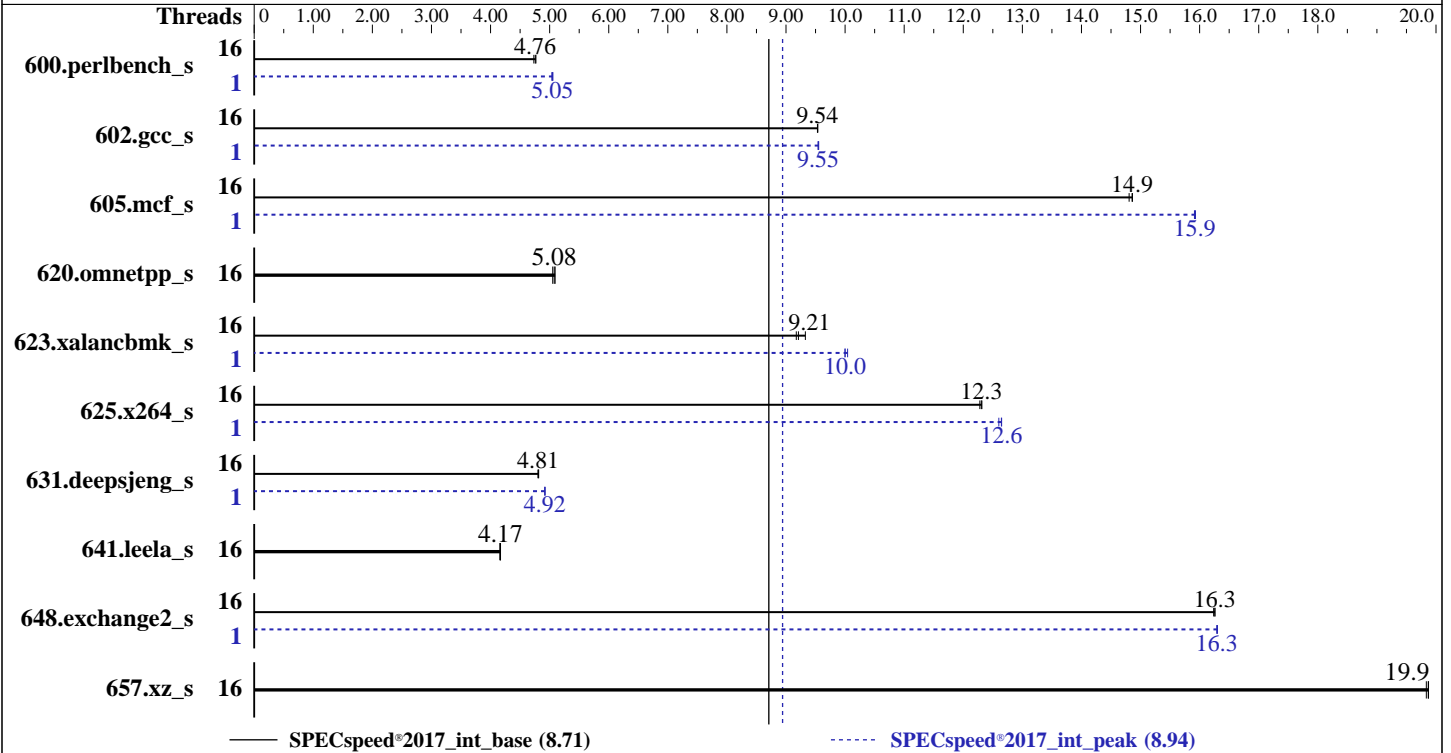
Test Date: Oct-2019

Test Sponsor: Lenovo Global Technology

Hardware Availability: Aug-2019

Tested by: Lenovo Global Technology

Software Availability: Aug-2019



### Hardware

CPU Name: AMD EPYC 7302P  
 Max MHz: 3300  
 Nominal: 3000  
 Enabled: 16 cores, 1 chip  
 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 chip,  
 16 MB shared / 2 cores  
 Other: None  
 Memory: 256 GB (8 x 32 GB 2Rx4 PC4-3200AA-R)  
 Storage: 1 x 960 GB SATA SSD  
 Other: None

### Software

OS: Red Hat Enterprise Linux release 8.0 (Ootpa)  
 Kernel 4.18.0-80.el8.x86\_64  
 Compiler: C/C++/Fortran: Version 2.0.0 of AOCC  
 Parallel: Yes  
 Firmware: Lenovo BIOS Version CFE105D released Sep-2019  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other: jemalloc: jemalloc memory allocator library v5.1.0  
 Power Management: Disable



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

CPU2017 License: 9017  
Test Sponsor: Lenovo Global Technology  
Tested by: Lenovo Global Technology

Test Date: Oct-2019  
Hardware Availability: Aug-2019  
Software Availability: Aug-2019

## Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	16	<b>373</b>	<b>4.76</b>	375	4.73	372	4.77	1	352	5.04	<b>352</b>	<b>5.05</b>	351	5.06
602.gcc_s	16	418	9.54	418	9.53	<b>418</b>	<b>9.54</b>	1	417	9.54	417	9.55	<b>417</b>	<b>9.55</b>
605.mcf_s	16	319	14.8	<b>318</b>	<b>14.9</b>	318	14.9	1	<b>297</b>	<b>15.9</b>	297	15.9	296	15.9
620.omnetpp_s	16	323	5.05	<b>321</b>	<b>5.08</b>	320	5.09	16	323	5.05	<b>321</b>	<b>5.08</b>	320	5.09
623.xalancbmk_s	16	152	9.33	<b>154</b>	<b>9.21</b>	154	9.17	1	142	10.0	141	10.0	<b>142</b>	<b>10.0</b>
625.x264_s	16	144	12.3	<b>143</b>	<b>12.3</b>	143	12.3	1	140	12.6	<b>140</b>	<b>12.6</b>	139	12.6
631.deepsjeng_s	16	298	4.80	298	4.81	<b>298</b>	<b>4.81</b>	1	<b>291</b>	<b>4.92</b>	291	4.92	291	4.92
641.leela_s	16	409	4.17	410	4.16	<b>409</b>	<b>4.17</b>	16	409	4.17	410	4.16	<b>409</b>	<b>4.17</b>
648.exchange2_s	16	181	16.2	<b>181</b>	<b>16.3</b>	181	16.3	1	<b>180</b>	<b>16.3</b>	180	16.3	180	16.3
657.xz_s	16	311	19.9	<b>311</b>	<b>19.9</b>	312	19.8	16	311	19.9	<b>311</b>	<b>19.9</b>	312	19.8

SPECspeed®2017\_int\_base = **8.71**

SPECspeed®2017\_int\_peak = **8.94**

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

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019  
**Hardware Availability:** Aug-2019  
**Software Availability:** Aug-2019

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:  
GOMP\_CPU\_AFFINITY = "0-15"  
LD\_LIBRARY\_PATH =  
  "/home/cpu2017-1.1.0-amd-rome-aocc200-C1/amd\_speed\_aocc200\_rome\_C\_lib/64  
  ;/home/cpu2017-1.1.0-amd-rome-aocc200-C1/amd\_speed\_aocc200\_rome\_C\_lib/32  
  :"  
MALLOC\_CONF = "retain:true"  
OMP\_DYNAMIC = "false"  
OMP\_SCHEDULE = "static"  
OMP\_STACKSIZE = "128M"  
OMP\_THREAD\_LIMIT = "16"

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 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"

### 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.
- 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.
- Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a) is mitigated in the system as tested and documented.

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019

**Hardware Availability:** Aug-2019

**Software Availability:** Aug-2019

### General Notes (Continued)

is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (Spectre variant 4) 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 -fltto 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:

Operating Mode set to Maximum Performance

SMT Mode set to Disabled

NUMA nodes per socket set to NPS4

Sysinfo program /home/cpu2017-1.1.0-amd-rome-aocc200-C1/bin/sysinfo

Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011

running on localhost.localdomain Thu Oct 10 20:00:45 2019

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 7302P 16-Core Processor

1 "physical id"s (chips)

16 "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 : 16

siblings : 16

physical 0: cores 0 1 4 5 8 9 12 13 16 17 20 21 24 25 28 29

From lscpu:

Architecture: x86\_64

CPU op-mode(s): 32-bit, 64-bit

Byte Order: Little Endian

CPU(s): 16

On-line CPU(s) list: 0-15

Thread(s) per core: 1

Core(s) per socket: 16

Socket(s): 1

NUMA node(s): 4

Vendor ID: AuthenticAMD

CPU family: 23

Model: 49

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 8.71

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_peak = 8.94

CPU2017 License: 9017

Test Date: Oct-2019

Test Sponsor: Lenovo Global Technology

Hardware Availability: Aug-2019

Tested by: Lenovo Global Technology

Software Availability: Aug-2019

### Platform Notes (Continued)

```

Model name:          AMD EPYC 7302P 16-Core Processor
Stepping:           0
CPU MHz:            3284.731
CPU max MHz:        3000.0000
CPU min MHz:        1500.0000
BogoMIPS:           5989.21
Virtualization:     AMD-V
L1d cache:          32K
L1i cache:          32K
L2 cache:           512K
L3 cache:           16384K
NUMA node0 CPU(s): 0-3
NUMA node1 CPU(s): 4-7
NUMA node2 CPU(s): 8-11
NUMA node3 CPU(s): 12-15

```

```

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 xtopology nonstop_tsc cpuid 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 misalignsse 3dnowprefetch
osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb
cat_l3 cdp_l3 hw_pstate sme ssbd sev ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep
bmi2 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 avic v_vmsave_vmload vgif umip rdpid overflow_recov succor
smca

```

```

/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: 4 nodes (0-3)
node 0 cpus: 0 1 2 3
node 0 size: 64279 MB
node 0 free: 63930 MB
node 1 cpus: 4 5 6 7
node 1 size: 64498 MB
node 1 free: 64335 MB
node 2 cpus: 8 9 10 11
node 2 size: 64498 MB
node 2 free: 64313 MB
node 3 cpus: 12 13 14 15
node 3 size: 64485 MB
node 3 free: 64290 MB
node distances:

```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019  
**Hardware Availability:** Aug-2019  
**Software Availability:** Aug-2019

### Platform Notes (Continued)

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: 263948896 kB  
HugePages\_Total: 0  
Hugepagesize: 2048 kB

From /etc/\*release\* /etc/\*version\*

os-release:

NAME="Red Hat Enterprise Linux"  
VERSION="8.0 (Ootpa)"  
ID="rhel"  
ID\_LIKE="fedora"  
VERSION\_ID="8.0"  
PLATFORM\_ID="platform:el8"  
PRETTY\_NAME="Red Hat Enterprise Linux 8.0 (Ootpa)"  
ANSI\_COLOR="0;31"

redhat-release: Red Hat Enterprise Linux release 8.0 (Ootpa)  
system-release: Red Hat Enterprise Linux release 8.0 (Ootpa)  
system-release-cpe: cpe:/o:redhat:enterprise\_linux:8.0:ga

uname -a:

Linux localhost.localdomain 4.18.0-80.el8.x86\_64 #1 SMP Wed Mar 13 12:02:46 UTC 2019  
x86\_64 x86\_64 x86\_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault):	Not affected
Microarchitectural Data Sampling:	No status reported
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: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling

run-level 3 Oct 10 19:55

SPEC is set to: /home/cpu2017-1.1.0-amd-rome-aocc200-C1  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sdb2 xfs 838G 34G 804G 4% /home

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019  
**Hardware Availability:** Aug-2019  
**Software Availability:** Aug-2019

### Platform Notes (Continued)

```
From /sys/devices/virtual/dmi/id
  BIOS:      Lenovo          CFE105D 09/17/2019
  Vendor:    Lenovo
  Product:   ThinkSystem SR655 -[7Y00000000]-
  Product Family: ThinkSystem
  Serial:    0123456789
```

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 Samsung M393A4K40DB2-CWE 32 kB 2 rank 3200  
8x Unknown Unknown

(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  
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)
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019  
**Hardware Availability:** Aug-2019  
**Software Availability:** Aug-2019

### Compiler Version Notes (Continued)

Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

=====  
C++ | 623.xalancbmk\_s(peak)

-----  
AOCCLLVM.2.0.0.B191.2019\_07\_19 clang version 8.0.0 (CLANG: Jenkins  
AOCCLLVM.2.0.0.B191.2019\_07\_19) (based on LLVM AOCCLLVM.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)

-----  
AOCCLLVM.2.0.0.B191.2019\_07\_19 clang version 8.0.0 (CLANG: Jenkins  
AOCCLLVM.2.0.0.B191.2019\_07\_19) (based on LLVM AOCCLLVM.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)

-----  
AOCCLLVM.2.0.0.B191.2019\_07\_19 clang version 8.0.0 (CLANG: Jenkins  
AOCCLLVM.2.0.0.B191.2019\_07\_19) (based on LLVM AOCCLLVM.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





# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECspeed®2017\_int\_base = 8.71

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_peak = 8.94

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Oct-2019

Hardware Availability: Aug-2019

Software Availability: Aug-2019

## 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
```

## Base Optimization Flags

### C benchmarks:

```
-flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
-march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50
-freemap-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
-flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang
```

### C++ benchmarks:

```
-flto -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 -march=znver2
-mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC
-mllvm -unroll-threshold=100 -flv-function-specialization
-mllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang
```

### Fortran benchmarks:

```
-flto -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 -vector-library=LIBMVEC -z muldefs
-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Oct-2019

Hardware Availability: Aug-2019

Software Availability: Aug-2019

## Base Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP  
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc  
-lflang
```

## Base Other Flags

C benchmarks:

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

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.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.leela_s: -DSPEC_LP64  
648.exchange2_s: -DSPEC_LP64  
657.xz_s: -DSPEC_LP64
```



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Oct-2019

Hardware Availability: Aug-2019

Software Availability: Aug-2019

## 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
-DUSE_OPENMP -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
-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 -DUSE_OPENMP -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 -DSPEC_OPENMP -fopenmp
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019

**Hardware Availability:** Aug-2019

**Software Availability:** Aug-2019

## Peak Optimization Flags (Continued)

605.mcf\_s (continued):

```
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang
```

625.x264\_s: Same as 600.perlbench\_s

657.xz\_s: basepeak = yes

C++ benchmarks:

620.omnetpp\_s: basepeak = yes

623.xalancbmk\_s: -m32 -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 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc
```

631.deepsjeng\_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 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lmvec -lamdlibm -ljemalloc -lflang
```

641.leela\_s: basepeak = yes

Fortran benchmarks:

```
-flto -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
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

ThinkSystem SR655  
3.00 GHz, AMD EPYC 7302P

SPECspeed®2017\_int\_base = 8.71

SPECspeed®2017\_int\_peak = 8.94

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

**Test Date:** Oct-2019  
**Hardware Availability:** Aug-2019  
**Software Availability:** Aug-2019

## Peak Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-Mrecursive -mllvm -vector-library=LIBMVEC  
-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive  
-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP  
-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

<http://www.spec.org/cpu2017/flags/aocc200-flags-B1-1.html>

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Rome-C.html>

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

<http://www.spec.org/cpu2017/flags/aocc200-flags-B1-1.xml>

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Rome-C.xml>

SPEC CPU and SPECspeed are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.0 on 2019-10-10 08:00:44-0400.  
Report generated on 2019-10-29 16:10:43 by CPU2017 PDF formatter v6255.  
Originally published on 2019-10-29.