



# SPEC® CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.

R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281

SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

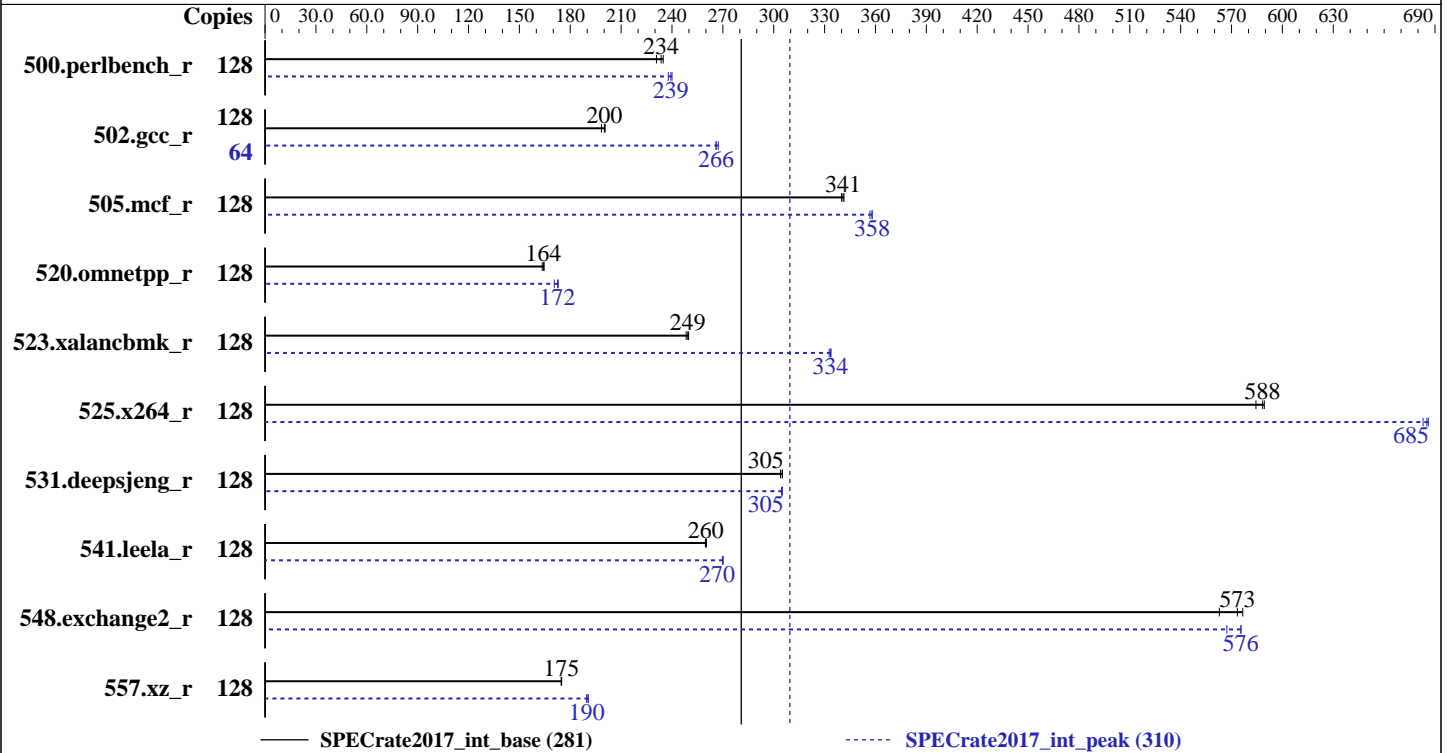
Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018



### Hardware

CPU Name: AMD EPYC 7601  
 Max MHz.: 3200  
 Nominal: 2200  
 Enabled: 64 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 64 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, 8 MB shared / 4 cores  
 Other: None  
 Memory: 1 TB (16 x 64 GB 4Rx4 PC4-2667V-L)

Storage: 1 x 512 GB AHCI PCIe M.2 SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 12 SP3 (x86\_64)  
 kernel 4.4.73-5-default

Compiler: C/C++: Version 1.0.0 of AOCC  
 Fortran: Version 4.8.2 of GCC

Parallel: No  
 Firmware: Version F07 released Jun-2018  
 File System: xfs  
 System State: Run Level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other: jemalloc general malloc implementation  
 V4.5.0



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	128	883	231	868	235	<b>872</b>	<b>234</b>	128	857	238	<b>851</b>	<b>239</b>	849	240
502.gcc_r	128	914	198	904	201	<b>906</b>	<b>200</b>	64	339	267	<b>341</b>	<b>266</b>	341	266
505.mcf_r	128	606	341	608	340	<b>607</b>	<b>341</b>	128	<b>578</b>	<b>358</b>	578	358	580	357
520.omnetpp_r	128	1020	165	<b>1022</b>	<b>164</b>	1027	163	128	984	171	<b>974</b>	<b>172</b>	971	173
523.xalancbmk_r	128	<b>542</b>	<b>249</b>	541	250	544	248	128	406	333	405	334	<b>405</b>	<b>334</b>
525.x264_r	128	384	584	380	589	<b>381</b>	<b>588</b>	128	328	683	<b>327</b>	<b>685</b>	327	686
531.deepsjeng_r	128	481	305	483	304	<b>481</b>	<b>305</b>	128	481	305	<b>481</b>	<b>305</b>	481	305
541.leela_r	128	<b>815</b>	<b>260</b>	816	260	814	260	128	785	270	<b>785</b>	<b>270</b>	785	270
548.exchange2_r	128	582	577	596	563	<b>585</b>	<b>573</b>	128	591	567	583	576	<b>583</b>	<b>576</b>
557.xz_r	128	790	175	<b>791</b>	<b>175</b>	792	175	128	728	190	725	191	<b>728</b>	<b>190</b>

SPECrate2017\_int\_base = 281

SPECrate2017\_int\_peak = 310

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## 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

runspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <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 were enabled for this run (OS default)

Huge pages were not configured for this run.



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## General Notes

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

```
LD_LIBRARY_PATH = "/home/amd/CPU2017/amd1704-rate-libs-revC/64:/home/amd/CPU2017/amd1704-rate-libs-revC/32:"  
MALLOC_CONF = "lg_chunk:26"
```

The AMD64 AOCC Compiler Suite is available at  
<http://developer.amd.com/amd-aocc/>

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using RHEL 7.4

jemalloc, a general purpose malloc implementation, was obtained at  
<https://github.com/jemalloc/jemalloc/releases/download/4.5.0/jemalloc-4.5.0.tar.bz2>  
jemalloc was built with GCC v4.8.5 in RHEL v7.2 under default conditions.  
jemalloc uses environment variable MALLOC\_CONF with values narenas and lg\_chunk:  
narenas: sets the maximum number of arenas to use for automatic multiplexing  
of threads and arenas.  
lg\_chunk: set the virtual memory chunk size (log base 2). For example,  
lg\_chunk:21 sets the default chunk size to  $2^{21} = 2\text{MiB}$ .

The AOCC Gold Linker plugin was installed and used for the link stage.

The AOCC Fortran Plugin version 1.0 was used to leverage AOCC optimizers  
with gfortran. It is available here:  
<http://developer.amd.com/amd-aocc/>

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.

## Platform Notes

BIOS Settings:

Determinism Slider = Power

cTDP Control = Manual

cTDP = 200

Sysinfo program /home/amd/CPU2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
running on linux-ojy8 Fri Jun 29 21:02:06 2018

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 7601 32-Core Processor

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.

R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281

SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Platform Notes (Continued)

2 "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 : 32
siblings  : 64
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
```

From lscpu:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                128
On-line CPU(s) list:   0-127
Thread(s) per core:    2
Core(s) per socket:    32
Socket(s):             2
NUMA node(s):         8
Vendor ID:             AuthenticAMD
CPU family:            23
Model:                1
Model name:            AMD EPYC 7601 32-Core Processor
Stepping:              2
CPU MHz:               2200.000
CPU max MHz:           2200.0000
CPU min MHz:           1200.0000
BogoMIPS:              4400.22
Virtualization:        AMD-V
L1d cache:             32K
L1i cache:             64K
L2 cache:              512K
L3 cache:              8192K
NUMA node0 CPU(s):    0-7,64-71
NUMA node1 CPU(s):    8-15,72-79
NUMA node2 CPU(s):    16-23,80-87
NUMA node3 CPU(s):    24-31,88-95
NUMA node4 CPU(s):    32-39,96-103
NUMA node5 CPU(s):    40-47,104-111
NUMA node6 CPU(s):    48-55,112-119
NUMA node7 CPU(s):    56-63,120-127
```

```
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 extd_apicid amd_dcm aperfmperf eagerfpu 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 skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx arat cpb
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.

SPECrate2017\_int\_base = 281

R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Date: Jun-2018

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Hardware Availability: Mar-2018

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Software Availability: Jun-2018

## Platform Notes (Continued)

hw\_pstate npt lbrv svm\_lock nrip\_save tsc\_scale vmcb\_clean flushbyasid decodeassists  
pausefilter pfthreshold vmmcall avic fsgsbase bml1 avx2 smep bmi2 rdseed adx smap  
clflushopt sha\_ni xsaveopt xsavec xgetbv1 clzero irperf 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: 8 nodes (0-7)
node 0 cpus: 0 1 2 3 4 5 6 7 64 65 66 67 68 69 70 71
node 0 size: 128896 MB
node 0 free: 128677 MB
node 1 cpus: 8 9 10 11 12 13 14 15 72 73 74 75 76 77 78 79
node 1 size: 129021 MB
node 1 free: 128843 MB
node 2 cpus: 16 17 18 19 20 21 22 23 80 81 82 83 84 85 86 87
node 2 size: 129021 MB
node 2 free: 128858 MB
node 3 cpus: 24 25 26 27 28 29 30 31 88 89 90 91 92 93 94 95
node 3 size: 129021 MB
node 3 free: 128834 MB
node 4 cpus: 32 33 34 35 36 37 38 39 96 97 98 99 100 101 102 103
node 4 size: 129021 MB
node 4 free: 128867 MB
node 5 cpus: 40 41 42 43 44 45 46 47 104 105 106 107 108 109 110 111
node 5 size: 129021 MB
node 5 free: 128876 MB
node 6 cpus: 48 49 50 51 52 53 54 55 112 113 114 115 116 117 118 119
node 6 size: 129021 MB
node 6 free: 128873 MB
node 7 cpus: 56 57 58 59 60 61 62 63 120 121 122 123 124 125 126 127
node 7 size: 116924 MB
node 7 free: 116771 MB
```

```
node distances:
node  0  1  2  3  4  5  6  7
 0:  10 16 16 16 32 32 32 32
 1:  16 10 16 16 32 32 32 32
 2:  16 16 10 16 32 32 32 32
 3:  16 16 16 10 32 32 32 32
 4:  32 32 32 32 10 16 16 16
 5:  32 32 32 32 16 10 16 16
 6:  32 32 32 32 16 16 10 16
 7:  32 32 32 32 16 16 16 10
```

```
From /proc/meminfo
MemTotal: 1044426224 kB
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Platform Notes (Continued)

HugePages\_Total: 0  
Hugepagesize: 2048 kB

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

SuSE-release:

SUSE Linux Enterprise Server 12 (x86\_64)

VERSION = 12

PATCHLEVEL = 3

# This file is deprecated and will be removed in a future service pack or release.

# Please check /etc/os-release for details about this release.

os-release:

NAME="SLES"

VERSION="12-SP3"

VERSION\_ID="12.3"

PRETTY\_NAME="SUSE Linux Enterprise Server 12 SP3"

ID="sles"

ANSI\_COLOR="0;32"

CPE\_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:

Linux linux-ojy8 4.4.73-5-default #1 SMP Tue Jul 4 15:33:39 UTC 2017 (b7ce4e4) x86\_64  
x86\_64 x86\_64 GNU/Linux

run-level 3 Jun 29 20:55

SPEC is set to: /home/amd/CPU2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	435G	4.7G	430G	2%	/home

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.

BIOS GIGABYTE F07 06/13/2018

Memory:

16x Samsung M386A8K40BM2-CTD 64 GB 4 rank 2667

16x Unknown Unknown

(End of data from sysinfo program)

## Compiler Version Notes

=====  
CC 502.gcc\_r(peak)  
=====

AOCC.LLVM.4.0.0.B35.2017\_04\_26 clang version 4.0.0 (CLANG:) (based on LLVM

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Compiler Version Notes (Continued)

AOCC.LLVM.4.0.0.B35.2017\_04\_26)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====  
CXXC 523.xalancbmk\_r(peak)

-----  
AOCC.LLVM.4.0.0.B35.2017\_04\_26 clang version 4.0.0 (CLANG:) (based on LLVM  
AOCC.LLVM.4.0.0.B35.2017\_04\_26)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====  
CC 500.perlbench\_r(base) 502.gcc\_r(base) 505.mcf\_r(base, peak)  
525.x264\_r(base) 557.xz\_r(base, peak)

-----  
AOCC.LLVM.4.0.0.B35.2017\_04\_26 clang version 4.0.0 (CLANG:) (based on LLVM  
AOCC.LLVM.4.0.0.B35.2017\_04\_26)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====  
CXXC 520.omnetpp\_r(base, peak) 523.xalancbmk\_r(base) 531.deepsjeng\_r(base,  
peak) 541.leela\_r(base)

-----  
AOCC.LLVM.4.0.0.B35.2017\_04\_26 clang version 4.0.0 (CLANG:) (based on LLVM  
AOCC.LLVM.4.0.0.B35.2017\_04\_26)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

=====  
CC 500.perlbench\_r(peak) 525.x264\_r(peak)

-----  
AOCC.LLVM.4.0.0.B35.2017\_04\_26 clang version 4.0.0 (CLANG:) (based on LLVM  
AOCC.LLVM.4.0.0.B35.2017\_04\_26)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Compiler Version Notes (Continued)

=====  
CXXC 541.leela\_r(peak)  
=====

AOCC.LLVM.4.0.0.B35.2017\_04\_26 clang version 4.0.0 (CLANG:) (based on LLVM  
AOCC.LLVM.4.0.0.B35.2017\_04\_26)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /root/work/compilers/AOCC-1.0-Compiler/bin  
=====

=====  
FC 548.exchange2\_r(base, peak)  
=====

GNU Fortran (GCC) 4.8.2  
Copyright (C) 2013 Free Software Foundation, Inc.  
GNU Fortran comes with NO WARRANTY, to the extent permitted by law.  
You may redistribute copies of GNU Fortran  
under the terms of the GNU General Public License.  
For more information about these matters, see the file named COPYING  
=====

## Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

clang gfortran

## Base Portability Flags

500.perlbench\_r: -DSPEC\_LINUX\_X64 -DSPEC\_LP64  
502.gcc\_r: -DSPEC\_LP64  
505.mcf\_r: -DSPEC\_LP64  
520.omnetpp\_r: -DSPEC\_LP64  
523.xalancbmk\_r: -DSPEC\_LINUX -DSPEC\_LP64  
525.x264\_r: -DSPEC\_LP64  
531.deepsjeng\_r: -DSPEC\_LP64  
541.leela\_r: -DSPEC\_LP64

(Continued on next page)





# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Base Portability Flags (Continued)

548.exchange2\_r: -DSPEC\_LP64

557.xz\_r: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop  
-disable-vect-cmp -O3 -ffast-math -march=znver1 -fstruct-layout=2  
-mllvm -unroll-threshold=100 -fremap-arrays -mno-avx2  
-inline-threshold=1000 -z muldefs -ljemalloc
```

C++ benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop  
-disable-vect-cmp -O3 -march=znver1 -mllvm -unroll-threshold=100  
-finline-aggressive -fremap-arrays -inline-threshold=1000 -z muldefs  
-ljemalloc
```

Fortran benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop  
-disable-vect-cmp -O3(gfortran) -O3(clang) -mavx -madx  
-funroll-loops -ffast-math -z muldefs -Ofast -fdefault-integer-8  
-fplugin=dragonegg.so -fplugin-arg-dragonegg-llvm-option="  
-enable-iv-split -inline-threshold:1000 -disable-vect-cmp" -ljemalloc  
-lgfortran -lamdlibm
```

## Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

clang gfortran

## Peak Portability Flags

500.perlbench\_r: -DSPEC\_LINUX\_X64 -DSPEC\_LP64

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281  
SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Peak Portability Flags (Continued)

```
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -D_FILE_OFFSET_BITS=64
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -flto -Wl, -plugin-opt= -merge-constant
-lsr-in-nested-loop -fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -Ofast -march=znver1
-fstruct-layout=3 -mllvm -vectorize-memory-aggressively
-mno-avx2 -unroll-threshold=100 -fremap-arrays
-inline-threshold=1000 -ljemalloc
```

```
502.gcc_r: -m32 -flto -Wl, -plugin-opt= -merge-constant
-lsr-in-nested-loop -Ofast -march=znver1
-fstruct-layout=3 -mllvm -vectorize-memory-aggressively
-mno-avx2 -unroll-threshold=100 -fremap-arrays
-inline-threshold=1000 -fgnu89-inline
-L/root/work/lib/jemalloc/lib32 -ljemalloc
```

```
505.mcf_r: -flto -Wl, -plugin-opt= -merge-constant
-lsr-in-nested-loop -Ofast -march=znver1
-fstruct-layout=3 -mllvm -vectorize-memory-aggressively
-mno-avx2 -unroll-threshold=100 -fremap-arrays
-inline-threshold=1000 -ljemalloc
```

525.x264\_r: Same as 500.perlbench\_r

557.xz\_r: Same as 505.mcf\_r

C++ benchmarks:

```
520.omnetpp_r: -flto -Wl, -plugin-opt= -merge-constant
-lsr-in-nested-loop -Ofast -march=znver1
-finline-aggressive -mllvm -unroll-threshold=100
-fremap-arrays -inline-threshold=1000 -ljemalloc
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

GIGA-BYTE TECHNOLOGY CO., LTD.  
R281-Z91  
(AMD EPYC 7601, 2.20 GHz)

SPECrate2017\_int\_base = 281

SPECrate2017\_int\_peak = 310

CPU2017 License: 4872

Test Sponsor: GIGA-BYTE TECHNOLOGY CO., LTD.

Tested by: GIGA-BYTE TECHNOLOGY CO., LTD.

Test Date: Jun-2018

Hardware Availability: Mar-2018

Software Availability: Jun-2018

## Peak Optimization Flags (Continued)

```
523.xalancbmk_r: -m32 -flto -Wl, -plugin-opt= -merge-constant
-lsr-in-nested-loop -Ofast -march=znver1
-finline-aggressive -mllvm -unroll-threshold=100
-fremap-arrays -inline-threshold=1000
-L/root/work/lib/jemalloc/lib32 -ljemalloc
```

531.deepsjeng\_r: Same as 520.omnetpp\_r

```
541.leela_r: -flto -Wl, -plugin-opt= -merge-constant
-lsr-in-nested-loop -fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -Ofast -march=znver1 -mllvm
-unroll-count=8 -unroll-threshold=100 -ljemalloc
```

Fortran benchmarks:

```
-flto -Wl, -plugin-opt= -merge-constant -lsr-in-nested-loop
-O3(gfortran) -O3(clang) -mavx2 -madx -funroll-loops -ffast-math
-Ofast -fdefault-integer-8 -fplugin=dragonegg.so
-fplugin-arg-dragonegg-llvm-option=" -enable-iv-split
-inline-threshold:1000 -disable-vect-cmp" -ljemalloc -lgfortran
-lamdlibm
```

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

<http://www.spec.org/cpu2017/flags/gcc.2018-02-16.html>

<http://www.spec.org/cpu2017/flags/aocc100-flags-revC-I.2018-02-16.html>

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

<http://www.spec.org/cpu2017/flags/gcc.2018-02-16.xml>

<http://www.spec.org/cpu2017/flags/aocc100-flags-revC-I.2018-02-16.xml>

SPEC is a registered trademark 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 CPU2017 v1.0.2 on 2018-06-29 09:02:06-0400.

Report generated on 2019-02-21 17:32:33 by CPU2017 PDF formatter v6067.

Originally published on 2018-07-24.