



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

## Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

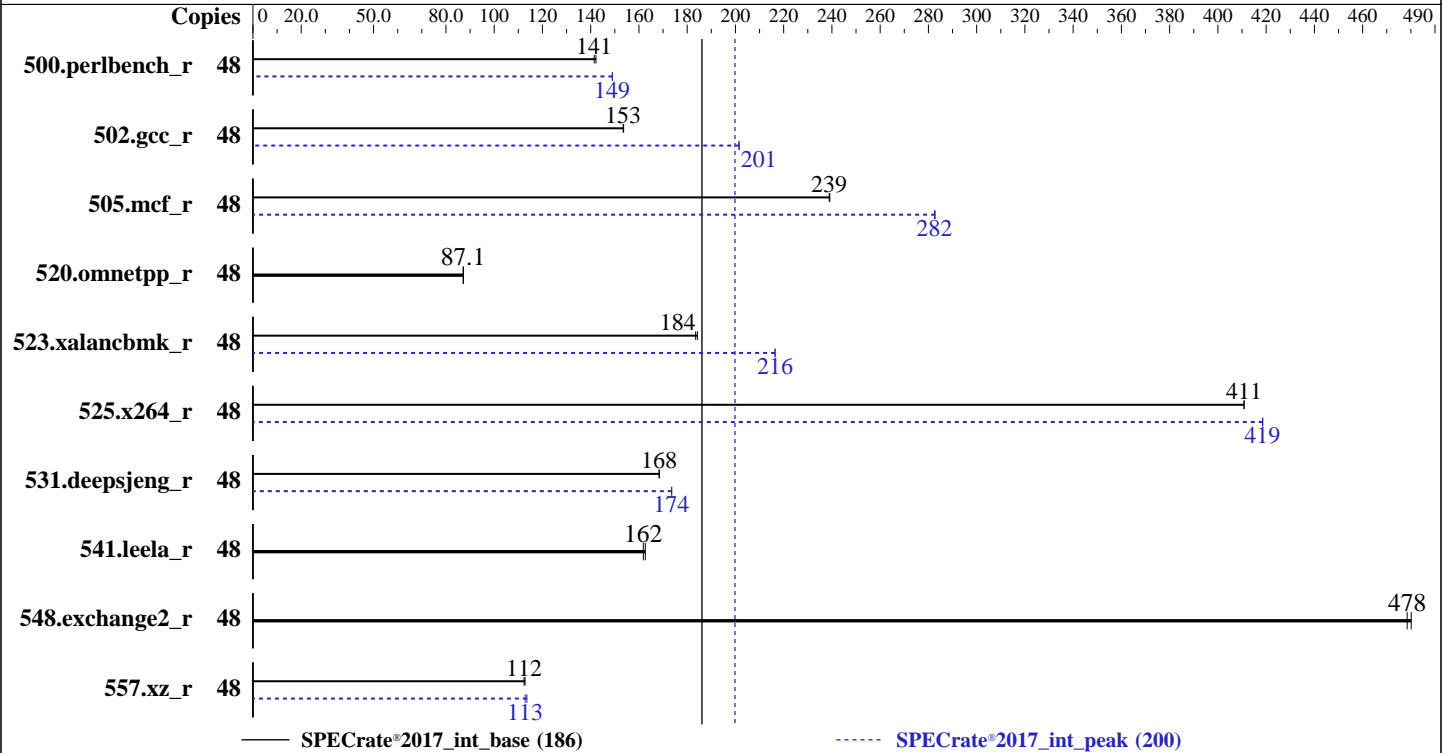
Test Date: Mar-2020

Test Sponsor: Dell Inc.

Hardware Availability: Apr-2020

Tested by: Dell Inc.

Software Availability: Aug-2019



### Hardware

CPU Name: AMD EPYC 7F72  
 Max MHz: 3700  
 Nominal: 3200  
 Enabled: 24 cores, 1 chip, 2 threads/core  
 Orderable: 1 chip  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 512 KB I+D on chip per core  
 L3: 192 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, running at 3200)  
 Storage: 1 x 800 GB SAS12 SSD  
 Other: None

### Software

OS: Ubuntu 19.04  
 kernel 5.0.0-16-generic  
 Compiler: C/C++/Fortran: Version 2.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 1.4.4 released Mar-2020  
 File System: ext4  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other: jemalloc: jemalloc memory allocator library v5.2.0  
 Power Management: BIOS set to prefer performance at the cost of additional power usage.



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.

Test Date: Mar-2020  
Hardware Availability: Apr-2020  
Software Availability: Aug-2019

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	48	<b>540</b>	<b>141</b>	537	142			48	<b>513</b>	<b>149</b>	513	149		
502.gcc_r	48	442	154	<b>443</b>	<b>153</b>			48	337	202	<b>337</b>	<b>201</b>		
505.mcf_r	48	324	239	<b>325</b>	<b>239</b>			48	<b>275</b>	<b>282</b>	274	283		
520.omnetpp_r	48	<b>723</b>	<b>87.1</b>	722	87.3			48	<b>723</b>	<b>87.1</b>	722	87.3		
523.xalancbmk_r	48	275	184	<b>276</b>	<b>184</b>			48	234	216	<b>234</b>	<b>216</b>		
525.x264_r	48	205	411	<b>205</b>	<b>411</b>			48	<b>201</b>	<b>419</b>	201	419		
531.deepsjeng_r	48	327	168	<b>327</b>	<b>168</b>			48	<b>317</b>	<b>174</b>	317	174		
541.leela_r	48	489	163	<b>491</b>	<b>162</b>			48	489	163	<b>491</b>	<b>162</b>		
548.exchange2_r	48	<b>263</b>	<b>478</b>	262	480			48	<b>263</b>	<b>478</b>	262	480		
557.xz_r	48	<b>461</b>	<b>112</b>	460	113			48	<b>459</b>	<b>113</b>	457	114		

SPECrate®2017\_int\_base = **186**

SPECrate®2017\_int\_peak = **200**

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).

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Date: Mar-2020

Test Sponsor: Dell Inc.

Hardware Availability: Apr-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Operating System Notes (Continued)

Transparent huge pages set to 'always' for this run (OS default)

## Environment Variables Notes

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

```
LD_LIBRARY_PATH =  
    "/root/cpu2017-1.1.0/amd_rate_aocc200_rome_C_lib/64:/root/cpu2017-1.1.0/  
    amd_rate_aocc200_rome_C_lib/32:"  
MALLOCONF = "retain:true"
```

## 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.

jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flt0  
jemalloc 5.2.0 is available here:  
<https://github.com/jemalloc/jemalloc/releases/download/5.2.0/jemalloc-5.2.0.tar.bz2>

## Platform Notes

BIOS settings:

```
NUMA Nodes Per Socket set to 2  
CCX as NUMA Domain set to Enabled  
System Profile set to Custom  
CPU Power Management set to Maximum Performance  
Memory Frequency set to Maximum Performance  
Turbo Boost Enabled  
Cstates set to Enabled  
Memory Patrol Scrub Disabled  
Memory Refresh Rate set to 1x  
PCI ASPM L1 Link Power Management Disabled  
Determinism Slider set to Power Determinism  
Efficiency Optimized Mode Disabled  
Memory Interleaving set to Disabled
```

Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Platform Notes (Continued)

Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011  
running on user-PowerEdge-R6515 Mon Mar 23 17:12:03 2020

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 7F72 24-Core Processor
 1 "physical id"s (chips)
 48 "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 4 5 8 9 12 13 16 17 20 21 24 25 28 29 32 33 36 37 40 41 44 45
```

From lscpu:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
Address sizes:         43 bits physical, 48 bits virtual
CPU(s):                48
On-line CPU(s) list:  0-47
Thread(s) per core:    2
Core(s) per socket:    24
Socket(s):             1
NUMA node(s):         12
Vendor ID:             AuthenticAMD
CPU family:            23
Model:                 49
Model name:            AMD EPYC 7F72 24-Core Processor
Stepping:              0
CPU MHz:               1796.333
BogoMIPS:              6387.86
Virtualization:        AMD-V
L1d cache:             32K
L1i cache:             32K
L2 cache:              512K
L3 cache:              16384K
NUMA node0 CPU(s):    0,1,24,25
NUMA node1 CPU(s):    2,3,26,27
NUMA node2 CPU(s):    4,5,28,29
NUMA node3 CPU(s):    6,7,30,31
NUMA node4 CPU(s):    8,9,32,33
NUMA node5 CPU(s):    10,11,34,35
NUMA node6 CPU(s):    12,13,36,37
```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Date: Mar-2020

Test Sponsor: Dell Inc.

Hardware Availability: Apr-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Platform Notes (Continued)

```

NUMA node7 CPU(s): 14,15,38,39
NUMA node8 CPU(s): 16,17,40,41
NUMA node9 CPU(s): 18,19,42,43
NUMA node10 CPU(s): 20,21,44,45
NUMA node11 CPU(s): 22,23,46,47

```

```

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 mba 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: 12 nodes (0-11)
node 0 cpus: 0 1 24 25
node 0 size: 21115 MB
node 0 free: 20871 MB
node 1 cpus: 2 3 26 27
node 1 size: 21500 MB
node 1 free: 21401 MB
node 2 cpus: 4 5 28 29
node 2 size: 21502 MB
node 2 free: 21282 MB
node 3 cpus: 6 7 30 31
node 3 size: 21501 MB
node 3 free: 21320 MB
node 4 cpus: 8 9 32 33
node 4 size: 21500 MB
node 4 free: 21402 MB
node 5 cpus: 10 11 34 35
node 5 size: 21503 MB
node 5 free: 21198 MB
node 6 cpus: 12 13 36 37
node 6 size: 21501 MB
node 6 free: 21371 MB
node 7 cpus: 14 15 38 39
node 7 size: 21477 MB

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Platform Notes (Continued)

```

node 7 free: 21337 MB
node 8 cpus: 16 17 40 41
node 8 size: 21503 MB
node 8 free: 21399 MB
node 9 cpus: 18 19 42 43
node 9 size: 21501 MB
node 9 free: 21330 MB
node 10 cpus: 20 21 44 45
node 10 size: 21500 MB
node 10 free: 21345 MB
node 11 cpus: 22 23 46 47
node 11 size: 21490 MB
node 11 free: 21357 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11
 0:  10 11 11 11 11 11 12 12 12 12 12 12
 1:  11 10 11 11 11 11 12 12 12 12 12 12
 2:  11 11 10 11 11 11 12 12 12 12 12 12
 3:  11 11 11 10 11 11 12 12 12 12 12 12
 4:  11 11 11 11 10 11 12 12 12 12 12 12
 5:  11 11 11 11 11 10 12 12 12 12 12 12
 6:  12 12 12 12 12 12 10 11 11 11 11 11
 7:  12 12 12 12 12 12 11 10 11 11 11 11
 8:  12 12 12 12 12 12 11 11 10 11 11 11
 9:  12 12 12 12 12 12 11 11 11 10 11 11
10:  12 12 12 12 12 12 11 11 11 11 10 11
11:  12 12 12 12 12 12 11 11 11 11 11 10

```

```

From /proc/meminfo
MemTotal:      263782164 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

/usr/bin/lsb_release -d
Ubuntu 19.04

```

```

From /etc/*release* /etc/*version*
debian_version: buster/sid
os-release:
NAME="Ubuntu"
VERSION="19.04 (Disco Dingo)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 19.04"
VERSION_ID="19.04"
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Platform Notes (Continued)

uname -a:

```
Linux user-PowerEdge-R6515 5.0.0-16-generic #17-Ubuntu SMP Wed May 15 10:52:21 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:	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: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Mar 23 16:58 last=5

SPEC is set to: /root/cpu2017-1.1.0

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda2	ext4	732G	33G	663G	5%	/

From /sys/devices/virtual/dmi/id

```
BIOS: Dell Inc. 1.4.4 03/18/2020
Vendor: Dell Inc.
Product: PowerEdge R6515
Product Family: PowerEdge
```

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:

```
7x 80AD80B380AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
1x 80AD863280AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
8x Not Specified Not Specified
```

(End of data from sysinfo program)

## Compiler Version Notes

```
=====
C | 502.gcc_r(peak)
=====
```

AOCC.LLVM.2.0.0.B191.2019\_07\_19 clang version 8.0.0 (CLANG: Jenkins)

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Compiler Version Notes (Continued)

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          | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
          | 525.x264_r(base, peak) 557.xz_r(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          | 502.gcc_r(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          | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
          | 525.x264_r(base, peak) 557.xz_r(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++       | 523.xalancbmk_r(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

(Continued on next page)





# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Compiler Version Notes (Continued)

```
=====
C++      | 520.omnetpp_r(base, peak) 523.xalanbmk_r(base)
         | 531.deepsjeng_r(base, peak) 541.leela_r(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++      | 523.xalanbmk_r(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++      | 520.omnetpp_r(base, peak) 523.xalanbmk_r(base)
         | 531.deepsjeng_r(base, peak) 541.leela_r(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
=====
```

```
=====
Fortran  | 548.exchange2_r(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
=====
```



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

## 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
548.exchange2_r: -DSPEC_LP64
557.xz_r: -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 -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
```

(Continued on next page)



# SPEC CPU<sup>®</sup>2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate<sup>®</sup>2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate<sup>®</sup>2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Base Optimization Flags (Continued)

C++ benchmarks (continued):

```
-mllvm -enable-partial-unswitch -z muldefs -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  
-mllvm -unroll-threshold=150 -lmvec -lamdlibm -ljemalloc -lflang
```

## Peak Compiler Invocation

C benchmarks:

```
clang
```

C++ benchmarks:

```
clang++
```

Fortran benchmarks:

```
flang
```

## Peak Portability Flags

```
500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64  
502.gc_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
```



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -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 -lmvec -lamdlibm -ljemalloc
-lflang
```

```
502.gcc_r: -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 -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 -fgnu89-inline -ljemalloc
```

```
505.mcf_r: -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 -lmvec -lamdlibm -ljemalloc
-lflang
```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

## Peak Optimization Flags (Continued)

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

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

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

523.xalancbmk\_r: -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 -ljemalloc

531.deepsjeng\_r: -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 -lmvec -lamdlibm -ljemalloc  
-lflang

541.leela\_r: basepeak = yes

Fortran benchmarks:

548.exchange2\_r: basepeak = yes

## Peak Other Flags

C benchmarks:

502.gcc\_r: -L/sppo/dev/cpu2017/v110/amd\_rate\_aocc200\_rome\_C\_lib/32

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 186

PowerEdge R6515 (AMD EPYC 7F72, 3.20 GHz)

SPECrate®2017\_int\_peak = 200

CPU2017 License: 55

Test Date: Mar-2020

Test Sponsor: Dell Inc.

Hardware Availability: Apr-2020

Tested by: Dell Inc.

Software Availability: Aug-2019

## Peak Other Flags (Continued)

C++ benchmarks:

```
523.xalancbmk_r: -L/sppo/dev/cpu2017/v1110/amd_rate_aocc200_rome_C_lib/32
```

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

<http://www.spec.org/cpu2017/flags/aocc200-flags-C3.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE9.html>

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

<http://www.spec.org/cpu2017/flags/aocc200-flags-C3.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE9.xml>

SPEC CPU and SPECrate 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 2020-03-23 18:12:03-0400.

Report generated on 2020-04-14 14:08:44 by CPU2017 PDF formatter v6255.

Originally published on 2020-04-14.