



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Dell Inc.

SPECrate®2017\_int\_base = 329

PowerEdge R7515 (AMD EPYC 7742, 2.25GHz)

SPECrate®2017\_int\_peak = 363

CPU2017 License: 55

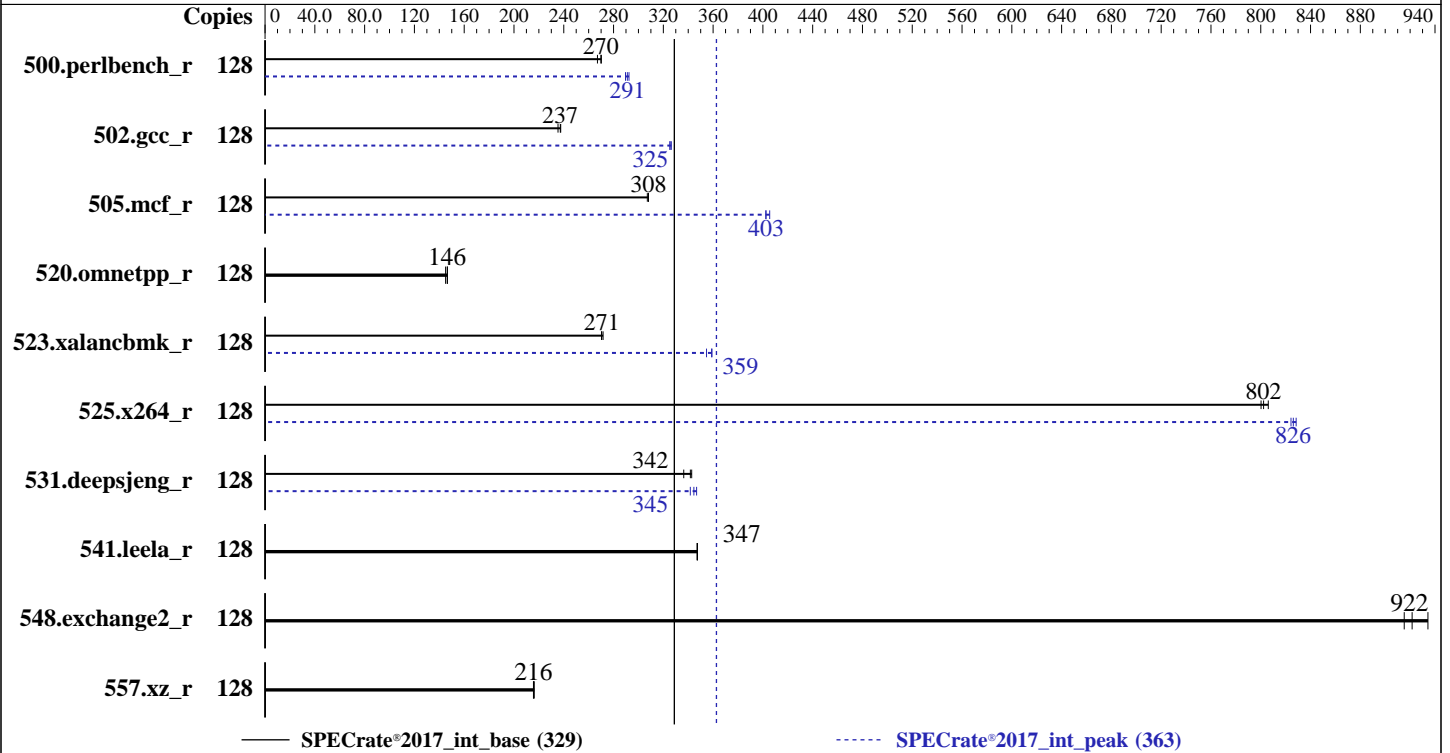
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Sep-2019

Software Availability: Aug-2019



### Hardware

CPU Name: AMD EPYC 7742  
 Max MHz: 3400  
 Nominal: 2250  
 Enabled: 64 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: 256 MB I+D on chip per chip, 16 MB shared / 4 cores  
 Other: None  
 Memory: 256 GB (8 x 32 GB 2Rx4 PC4-3200AA-R, running at 3200)  
 Storage: 1 x 960 GB SAS SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP1  
 kernel 4.12.14-195-default  
 Compiler: C/C++/Fortran: Version 2.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 1.0.4 released Aug-2019  
 File System: xfs  
 System State: Run level 5 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other: jemalloc: jemalloc memory allocator library v5.2.0  
 Power Management: --



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## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	128	754	270	<b><u>755</u></b>	<b><u>270</u></b>	763	267	128	<b><u>700</u></b>	<b><u>291</u></b>	704	290	697	292
502.gcc_r	128	763	238	<b><u>764</u></b>	<b><u>237</u></b>	770	235	128	<b><u>557</u></b>	<b><u>325</u></b>	555	326	557	325
505.mcf_r	128	671	308	<b><u>671</u></b>	<b><u>308</u></b>	673	307	128	514	402	510	405	<b><u>514</u></b>	<b><u>403</u></b>
520.omnetpp_r	128	<b><u>1147</u></b>	<b><u>146</u></b>	1158	145	1146	147	128	<b><u>1147</u></b>	<b><u>146</u></b>	1158	145	1146	147
523.xalancbmk_r	128	498	272	<b><u>500</u></b>	<b><u>271</u></b>	500	270	128	<b><u>377</u></b>	<b><u>359</u></b>	376	359	381	355
525.x264_r	128	278	806	280	800	<b><u>279</u></b>	<b><u>802</u></b>	128	271	828	<b><u>271</u></b>	<b><u>826</u></b>	272	824
531.deepsjeng_r	128	436	336	428	343	<b><u>429</u></b>	<b><u>342</u></b>	128	423	347	429	342	<b><u>426</u></b>	<b><u>345</u></b>
541.leela_r	128	<b><u>610</u></b>	<b><u>347</u></b>	611	347	610	347	128	<b><u>610</u></b>	<b><u>347</u></b>	611	347	610	347
548.exchange2_r	128	366	915	359	934	<b><u>364</u></b>	<b><u>922</u></b>	128	366	915	359	934	<b><u>364</u></b>	<b><u>922</u></b>
557.xz_r	128	<b><u>641</u></b>	<b><u>216</u></b>	639	216	641	216	128	<b><u>641</u></b>	<b><u>216</u></b>	639	216	641	216

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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  
'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).

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## Operating System Notes (Continued)

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

## General Notes

Environment variables set by runcpu before the start of the run:  
LD\_LIBRARY\_PATH = "/root/cpu2017-1.0.5/amd\_rate\_aocc200\_rome\_B\_lib/64;  
/root/cpu2017-1.0.5/amd\_rate\_aocc200\_rome\_B\_lib/32:"  
MALLOCONF = "retain:true"

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 -flto  
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 4  
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  
Sysinfo program /root/cpu2017-1.0.5/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on linux-g30b Wed Sep 4 11:05:29 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

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## Platform Notes (Continued)

model name : AMD EPYC 7742 64-Core Processor

1 "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 : 64

siblings : 128

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24  
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52  
53 54 55 56 57 58 59 60 61 62 63

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): 128  
On-line CPU(s) list: 0-127  
Thread(s) per core: 2  
Core(s) per socket: 64  
Socket(s): 1  
NUMA node(s): 16  
Vendor ID: AuthenticAMD  
CPU family: 23  
Model: 49  
Model name: AMD EPYC 7742 64-Core Processor  
Stepping: 0  
CPU MHz: 2245.880  
BogoMIPS: 4491.76  
Virtualization: AMD-V  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 512K  
L3 cache: 16384K  
NUMA node0 CPU(s): 0-3,64-67  
NUMA node1 CPU(s): 4-7,68-71  
NUMA node2 CPU(s): 8-11,72-75  
NUMA node3 CPU(s): 12-15,76-79  
NUMA node4 CPU(s): 16-19,80-83  
NUMA node5 CPU(s): 20-23,84-87  
NUMA node6 CPU(s): 24-27,88-91  
NUMA node7 CPU(s): 28-31,92-95  
NUMA node8 CPU(s): 32-35,96-99  
NUMA node9 CPU(s): 36-39,100-103  
NUMA node10 CPU(s): 40-43,104-107  
NUMA node11 CPU(s): 44-47,108-111  
NUMA node12 CPU(s): 48-51,112-115

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## Platform Notes (Continued)

NUMA node13 CPU(s): 52-55,116-119

NUMA node14 CPU(s): 56-59,120-123

NUMA node15 CPU(s): 60-63,124-127

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 xtopology nonstop\_tsc cpuid extd\_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 sse4\_1 sse4\_2 movbe popcnt aes xsave avx fl6c 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\_l2 mwaitx cpb cat\_l3 cdp\_l3 hw\_pstate sme ssbd sev ibrs ibpb stibp vmmcall fsgsbase bml 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 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: 16 nodes (0-15)  
node 0 cpus: 0 1 2 3 64 65 66 67  
node 0 size: 15691 MB  
node 0 free: 15521 MB  
node 1 cpus: 4 5 6 7 68 69 70 71  
node 1 size: 16126 MB  
node 1 free: 15249 MB  
node 2 cpus: 8 9 10 11 72 73 74 75  
node 2 size: 16126 MB  
node 2 free: 15944 MB  
node 3 cpus: 12 13 14 15 76 77 78 79  
node 3 size: 16125 MB  
node 3 free: 16016 MB  
node 4 cpus: 16 17 18 19 80 81 82 83  
node 4 size: 16126 MB  
node 4 free: 15968 MB  
node 5 cpus: 20 21 22 23 84 85 86 87  
node 5 size: 16126 MB  
node 5 free: 16059 MB  
node 6 cpus: 24 25 26 27 88 89 90 91  
node 6 size: 16126 MB  
node 6 free: 16059 MB  
node 7 cpus: 28 29 30 31 92 93 94 95  
node 7 size: 16125 MB  
node 7 free: 16043 MB  
node 8 cpus: 32 33 34 35 96 97 98 99  
node 8 size: 16126 MB

(Continued on next page)



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## Platform Notes (Continued)

```

node 8 free: 15972 MB
node 9 cpus: 36 37 38 39 100 101 102 103
node 9 size: 16096 MB
node 9 free: 16034 MB
node 10 cpus: 40 41 42 43 104 105 106 107
node 10 size: 16126 MB
node 10 free: 16005 MB
node 11 cpus: 44 45 46 47 108 109 110 111
node 11 size: 16125 MB
node 11 free: 16039 MB
node 12 cpus: 48 49 50 51 112 113 114 115
node 12 size: 16126 MB
node 12 free: 16046 MB
node 13 cpus: 52 53 54 55 116 117 118 119
node 13 size: 16126 MB
node 13 free: 16021 MB
node 14 cpus: 56 57 58 59 120 121 122 123
node 14 size: 16126 MB
node 14 free: 16056 MB
node 15 cpus: 60 61 62 63 124 125 126 127
node 15 size: 16111 MB
node 15 free: 16022 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
 0:  10 11 11 11 12 12 12 12 12 12 12 12 12 12 12 12
 1:  11 10 11 11 12 12 12 12 12 12 12 12 12 12 12 12
 2:  11 11 10 11 12 12 12 12 12 12 12 12 12 12 12 12
 3:  11 11 11 10 12 12 12 12 12 12 12 12 12 12 12 12
 4:  12 12 12 12 10 11 11 11 12 12 12 12 12 12 12 12
 5:  12 12 12 12 11 10 11 11 12 12 12 12 12 12 12 12
 6:  12 12 12 12 11 11 10 11 12 12 12 12 12 12 12 12
 7:  12 12 12 12 11 11 11 10 12 12 12 12 12 12 12 12
 8:  12 12 12 12 12 12 12 12 10 11 11 11 12 12 12 12
 9:  12 12 12 12 12 12 12 12 11 10 11 11 12 12 12 12
10:  12 12 12 12 12 12 12 12 11 11 10 11 12 12 12 12
11:  12 12 12 12 12 12 12 12 11 11 11 10 12 12 12 12
12:  12 12 12 12 12 12 12 12 12 12 12 12 10 11 11 11
13:  12 12 12 12 12 12 12 12 12 12 12 12 11 10 11 11
14:  12 12 12 12 12 12 12 12 12 12 12 12 11 11 10 11
15:  12 12 12 12 12 12 12 12 12 12 12 12 11 11 11 10

```

```

From /proc/meminfo
MemTotal:      263721456 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

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

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## Platform Notes (Continued)

os-release:

```

NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

```

uname -a:

```

Linux linux-g3ob 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux

```

Kernel self-reported vulnerability status:

```

CVE-2017-5754 (Meltdown):          Not affected
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 5 Sep 4 18:53

SPEC is set to: /root/cpu2017-1.0.5

```

Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   440G   19G  422G   5% /

```

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 Dell Inc. 1.0.4 08/26/2019

Memory:

```

5x 80AD80B380AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
1x 80AD863280AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
2x 80AD869D80AD 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)

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## 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)
=====
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AOCC.LLVM.2.0.0.B191.2019\_07\_19 clang version 8.0.0 (CLANG: Jenkins  
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 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)  
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## Compiler Version Notes (Continued)

```

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

```

```

-----
AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCCLLVM.2.0.0-Build#191) (based on LLVM AOCCLLVM.2.0.0.B191.2019_07_19)
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-----

```

```

=====
C++      | 523.xalanbmk_r(peak)
=====

```

```

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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)
=====

```

```

-----
AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCCLLVM.2.0.0-Build#191) (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  | 548.exchange2_r(base, peak)
=====

```

```

-----
AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
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## 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
```

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# SPEC CPU®2017 Integer Rate Result

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Dell Inc.

SPECrate®2017\_int\_base = 329

PowerEdge R7515 (AMD EPYC 7742, 2.25GHz)

SPECrate®2017\_int\_peak = 363

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Sep-2019

Hardware Availability: Sep-2019

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
```



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## 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
```

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## Peak Optimization Flags (Continued)

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

557.xz\_r: basepeak = yes

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/amd\_rate\_aocc200\_rome/amd\_rate\_aocc200\_rome\_B\_lib/32

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## Peak Other Flags (Continued)

C++ benchmarks:

523.xalancbmk\_r: -L/sppo/dev/cpu2017/amd\_rate\_aocc200\_rome/amd\_rate\_aocc200\_rome\_B\_lib/32

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

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

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE5.html>

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

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

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE5.xml>

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